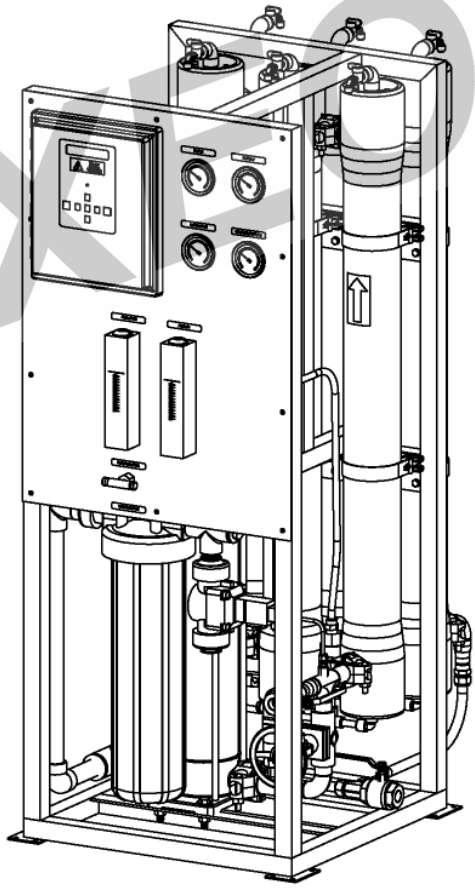
Reverse Osmosis User's Manual

Model

R2-1140, R2-2140, R2-3140,
R2-4140, R2-5140, R2-6140

AXEON®



R1-6140 Pictured

This Page Intentionally Left Blank

AXEON®

TABLE OF CONTENTS

INTRODUCTION 4
SAFETY 4
FEED WATER AND OPERATION SPECIFICATIONS 5
REJECTION, RECOVERY AND FLOW RATES 5
SYSTEM REQUIREMENTS AND OPERATION GUIDELINES 6
MEMBRANE ELEMENTS 8
R2-1140, R2-2140, R2-3140, R2-4140, R2-5140, R2-6140 13
SYSTEM IDENTIFICATION 13
SYSTEM PURGING 18
INITIAL START-UP 18
OPERATING DO's AND DON'Ts 20
OPERATION AND MAINTENANCE 20
MEMBRANE REMOVAL AND REPLACEMENT 22
FLUSHING THE SYSTEM 25
PREPARING UNIT FOR STORAGE OR SHIPMENT 25
REVERSE OSMOSIS TROUBLESHOOTING 27
TEMPERATURE CORRECTION FACTORS FOR MEMBRANE 29
OPERATION 31
DRAWINGS 32

AXEON®

INTRODUCTION

Your R2-Series Reverse Osmosis System is a durable piece of equipment which, with proper care, will last for many years. This User's Manual outlines installation, operation, maintenance, and troubleshooting details vital to the sustained performance of your system.

The test results which are included with this User's Manual indicate your system's permeate (product) and concentrate (waste) test results.

If your system is altered at the site of operation or if the feed water conditions change, please contact your local dealer or distributor to determine the proper recovery for your application.

NOTE: IN ORDER TO MAINTAIN THE MANUFACTURER'S WARRANTY, AN OPERATING LOG MUST BE MAINTAINED AND COPIES WILL NEED TO BE SENT TO YOUR LOCAL DEALER OR DISTRIBUTOR FOR REVIEW.

NOTE: PRIOR TO OPERATING OR SERVICING THE REVERSE OSMOSIS SYSTEM, THIS USER'S MANUAL MUST BE READ AND FULLY UNDERSTOOD. KEEP THIS AND OTHER ASSOCIATED INFORMATION FOR FUTURE REFERENCE AND FOR NEW OPERATORS OR QUALIFIED PERSONNEL NEAR THE SYSTEM.

SAFETY

The safety section of this User's Manual outlines the various safety headings used throughout this manual's text and are enhanced and defined below:

NOTE: INDICATES STATEMENTS THAT PROVIDE FURTHER INFORMATION AND CLARIFICATION.

CAUTION: INDICATES STATEMENTS THAT ARE USED TO IDENTIFY CONDITIONS OR PRACTICES THAT COULD RESULT IN EQUIPMENT OR OTHER PROPERTY DAMAGE.

WARNING: INDICATES STATEMENTS THAT ARE USED TO IDENTIFY CONDITIONS OR PRACTICES THAT COULD RESULT IN INJURY OR LOSS OF LIFE. FAILURE TO FOLLOW WARNINGS COULD RESULT IN SERIOUS INJURY OR EVEN DEATH.

DO NOT UNDER ANY CIRCUMSTANCE; REMOVE ANY CAUTION, WARNING, OR OTHER DESCRIPTIVE LABELS FROM THE SYSTEM.

AXEON®

FEED WATER AND OPERATION SPECIFICATIONS

Nothing has a greater effect on a reverse osmosis system than the feed water quality

NOTE: IT IS VERY IMPORTANT TO MEET THE MINIMUM FEED WATER REQUIREMENTS. FAILURE TO DO SO WILL CAUSE THE MEMBRANES TO FOUL AND VOID THE MANUFACTURER'S WARRANTY.

Operating Limits

Maximum Feed Temperature °F (°C)	85 (29)	Maximum Free Chlorine ppm	0
Minimum Feed Temperature °F (°C)	40 (4.4)	Maximum TDS ppm	10,000
Maximum Ambient Temperature °F (°C)	120 (48.9)	Maximum Hardness gpg	0
Minimum Ambient Temperature °F (°C)	40 (4.4)	Maximum pH (Continuous)	11
Maximum Feed Pressure psi (bar)	85 (5.9)	Minimum pH (Continuous)	5
Minimum Feed Pressure psi (bar)	45 (3.1)	Maximum pH (Cleaning 30 Min.)	12
Maximum Operating Pressure psi (bar)	400 (27.6)	Minimum pH (Cleaning 30 Min.)	2
Maximum SDI Rating SDI	<3	Maximum Turbidity NTU	1

Test Parameters: 10,000 TDS Filtered (5 Micron), De-Chlorinated, Feed Water, 65 psi (4.5 bar) Feed Pressure, 350 psi (24.13 bar) Operating Pressure, 77 Degrees F (25 Degrees C), Recovery as stated, 7.0 pH. Data taken after 60 minutes of operation.

Low temperatures and high feed water TDS levels will significantly affect the system's production capabilities. Computer projections should be run for individual applications which do not meet or exceed minimum and maximum operating limits.

Scale prevention measures must be taken to prolong membrane life.

NOTE: HIGHER TDS AND/OR LOWER FEED WATER TEMPERATURES WILL REDUCE THE SYSTEM'S PRODUCTION.

AXEON®

REJECTION, RECOVERY AND FLOW RATES

R2-Series Reverse Osmosis Systems are designed to produce permeate water at the capacities indicated in the "design basis section" on page 19 of this manual. For example, the R2-6140 produces 6.25 gallons per minute of permeate water at the listed operating test conditions.

The amount of total dissolved solids (TDS) rejected by the membrane is expressed as a percentage. For example, a 98.5% rejection rate means that 98.5% of total dissolved solids do not pass through the membrane. To calculate the % rejection, use the following formula:

% Rejection = [(Feed TDS – Product TDS) / Feed TDS] x 100

Example:

99.2% = [(10,000-80)/10,000] x 100

NOTE: ALL TDS FIGURES MUST BE EXPRESSED IN THE SAME UNITS, TYPICALLY PARTS PER MILLION (PPM) OR MILLIGRAMS PER LITER (MG/L).

R2-Series Reverse Osmosis Systems are designed to reject up to 99.2% NaCl, unless computer projections have been provided or stated otherwise.

The amount of permeate water recovered for use is expressed as a percentage. To calculate % recovery and % rejection, use the following formulas:

% Recovery = (Product Water Flow Rate / Feed Water Flow Rate) x 100

Example:

25% = (1.04/4.04) x 100

% Rejection = (Feed TDS – Product TDS)/(Feed TDS) x 100

Example:

99.2% = [(10,000-80)/10,000] x 100

NOTE: ALL FLOW RATES MUST BE EXPRESSED IN THE SAME UNITS.

SYSTEM REQUIREMENTS AND OPERATION GUIDELINES

PLUMBING

The membranes and high pressure pumps used on R2-Series Reverse Osmosis Systems require a continuous flow of water with a minimum feed pressure of 45 psi, not to exceed 85°F.

FEED WATER CONNECTION

1. Locate the 1" FNPT Solenoid Valve feed water inlet. (Figure 1A, Page 13)

2. Attach the inlet piping to the 1" FNPT Solenoid Valve feed water inlet.

PERMEATE (PRODUCT WATER) CONNECTION

Locate the 1" or 3/4" connection (depending on the unit) labeled permeate and attach to the storage tank. Ensure that the permeate water can flow freely with no backpressure. Backpressure can cause irreversible damage to the membrane elements. The 1" or 3/4" (depending on the unit) permeate line can be run to the holding tank with PVC fittings, or other FDA approved materials. This is so that the material being used does not leach into the permeate water.

CAUTION: THE PH OF THE REVERSE OSMOSIS PERMEATE WATER WILL TYPICALLY BE 1-2 PH UNITS LOWER THAN THE FEED WATER PH. A LOW PH CAN DAMAGE CERTAIN PLUMBING MATERIALS SUCH AS COPPER PIPING.

CONCENTRATE (WASTE WATER) CONNECTION

Locate the 1” or 3/4” connection (Depending on the unit) labeled concentrate and attach to a drain. Run the concentrate line to an open drain in a free and unrestricted manner (no backpressure). It is advised that an air-break be used on the concentrate line to prevent siphoning of water from the pressure vessels when the system is in standby.

CAUTION: ANY RESTRICTIONS OR BLOCKAGE IN THE DRAIN LINE CAN CAUSE BACKPRESSURE, WHICH WILL INCREASE THE SYSTEM’S OPERATING PRESSURE. THIS CAN RESULT IN DAMAGE TO THE SYSTEM’S MEMBRANES AND COMPONENTS.

ELECTRICAL

The R2-Series systems pump and motor are available in 220/460 Volt, 50/60 Hertz, 1 Phase/3 Phase. Each R2-Series system is equipped with a 5 foot electrical cord.

Ensure that the electrical circuit supplying the system is compatible with the requirements of the specific R2 model you are installing.

NOTE: IT’S RECOMMENDED THAT A LICENSED ELECTRICIAN WIRE YOUR SYSTEM IN ACCORDANCE WITH LOCAL AND NATIONAL ELECTRICAL CODES (NEC).

WARNING: TO REDUCE THE RISK OF ELECTRICAL SHOCK, THE INCOMING POWER SUPPLY MUST INCLUDE A PROTECTIVE EARTH GROUND.

R2-Series systems are typically controlled with a liquid level switch in a storage tank. The liquid level switch turns the system on when the water level in the tank drops, and off when the tank is full. Liquid level switches can be obtained by your local dealer or distributor. If a liquid level switch is to be used, install it at this time.

PRE-FILTRATION

R2-Series systems are supplied with a 5 micron sediment filter. Change the cartridge once a month or when a 10-15 psi differential exists between the pre-filter. Ask your local dealer or distributor about Pre-Filtration systems, if required.

NOTE: THE SYSTEM MUST BE OPERATED IN ACCORDANCE TO FEED WATER SPECIFICATIONS.

PUMP

The pump used on the R2-Series systems is a multi-stage centrifugal stainless steel type.

Follow these guidelines to ensure proper operation of the pump:

- The pump must **NEVER** be run dry. Operating the pump without sufficient feed water will damage the pump.
- **ALWAYS** feed the pump with filtered water. The pump is susceptible to damage from sediment and debris.

- If any damage occurs to your system's pump, a re-build kit is available. Contact your local dealer or distributor and inform them of your system's model and pump size.

MOUNTING

The free standing system should be bolted down in compliance with local regulation standards or securely fastened.

MEMBRANE ELEMENTS

R2-Series reverse osmosis systems come pre-loaded with FILMTEC® LC LE membranes, unless otherwise specified. General membrane element performance characteristics are listed on the following pages.

AXEON®

LC LE-4040-STANDARD

DOW FILMTEC™ Membranes

Large Commercial 4040 Reverse Osmosis Elements

Features

DOW FILMTEC™ LC 4040 product range are available to meet a wide variety of customer needs in commercial applications, from producing high purity water to delivering low total system costs. Dow's fully automated element production enables the most consistent products in the industry that minimizes the total cost of ownership of water treatment systems.

- LC HR-4040 produces high quality water with our state of the art RO membrane.
- LC LE-4040 delivers high quality water at low pressure at harsh water conditions, using Dow's innovative, proprietary technology for low energy applications.

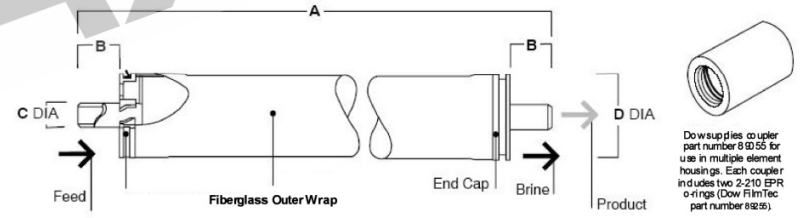
Product Specifications

Product	Part Number Dry (Wet)	Feed Spacer Thickness (mil)	Active Area – ft^2 (m^2)	Permeate Flow Rate gpd (m^3/d)	Min. Salt Rejection (%)	Stabilized Salt Rejection (%)
LC HR-4040	343771 / (343770)	28	94 (8.7)	2900 (11)	99.5	99.7
LC LE-4040	356603 / (356602)	28	94 (8.7)	2500 (9.5)	99.1	99.2

1. Permeate flow and salt rejection based on the following test conditions: 2000 ppm NaCl, 77°F (25°C), 15% recovery, pH 8, and applied pressure 225 psig for LC HR and 125 psig for LC LE
2. Permeate flows for individual elements may vary +/-15%.
3. For the purpose of improvement, specifications may be updated periodically.

LC HR-4040	Solute	NH_4^+	NO_3^-	SiO_2	Boron
	Stabilized rejection (%)	98.8	98.2	99.8	80.0

Figure 1



Product	A Inches (mm)	B Inches (mm)	C Inches (mm)	D Inches (mm)
LC HR-4040 and LC LE-4040	40.00 (1016)	1.05 (25.7)	0.75 (19)	3.9 (99)

1. Refer to DOW FILMTEC™ Design Guidelines for multiple-element systems
2. LC HR-4040 and LC HRLE-4040 elements fit nominal 4-inch I.D. pressure vessel.

™® Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

AXEON®

Operating Limits

Membrane type	Polyamide Thin-Film Composite
Maximum operating temperature[a]	113°F (45°C)
Maximum operating pressure	600 psig (41 bar)
Maximum pressure drop	15 psig (1.0 bar)
Maximum feed flow rate, gpm (m^3/h)	16 gpm (3.6 (m^3/h))
pH range, continuous operation[a]	2 - 11
pH range, short-term cleaning[b]	1 – 13
Maximum Feed Silt Density Index	SDI 5
Free chlorine concentration[c]	< 0.1 ppm

a. Maximum temperature for continuous operation above PH 10 is 95°F (35°C).
b. Refer to Cleaning Guidelines in specification sheet 609-23010.
c. Under certain conditions, the presence of free chlorine and other oxidizing agents will cause premature membrane failure. Since oxidation damage is not covered under warranty, Dow recommends removing residual free chlorine and other oxidants by pretreatment prior to membrane exposure. Please refer to technical bulletin 609-22010 for more information.

General Information

Proper start-up of reverse osmosis water treatment systems is essential to prepare the membranes for operating service and to prevent membrane damage due to overfeeding or hydraulic shock. Following the proper start-up sequence also helps ensure that system operating parameters conform to design specifications so that system water quality and productivity goals can be achieved.
Before initiating system start-up procedures, membrane pretreatment, loading of the membrane elements, instrument calibration and other system checks should be completed.
Please refer to the application information literature entitled "Start-Up Sequence" (Form No. 609-02077) for more information.

Operation Guidelines

Avoid any abrupt pressure or cross-flow variations on the spiral elements during start-up, shutdown, cleaning or other sequences to prevent possible membrane damage. During start-up, a gradual change from a standstill to operating state is recommended as follows:

- Feed pressure should be increased gradually over a 30-60 second time frame.
- Cross-flow velocity at set operating point should be achieved gradually over 15-20 seconds.
- Permeate obtained from first hour of operation should be discarded.

Important Information

Keep elements moist at all times after initial wetting.
If operating limits and guidelines given in this Product Bulletin are not strictly followed, the limited warranty in Form No. 609-35010 will be null and void.
To prevent biological growth during prolonged system shutdowns, it is recommended that membrane elements be immersed in a preservative solution.
The customer is fully responsible for the effects of incompatible chemicals and lubricants on elements.
Maximum pressure drop across an entire pressure vessel (housing) is 50 psi (3.4 bar).
Avoid static permeate-side backpressure at all times.

Regulatory Note

These membranes may be subject to drinking water application restrictions in some countries: please check the application status before use and sale.

DOW FILMTEC™ Membranes
For more information about DOW FILMTEC membranes, call the Dow Water & Process Solutions business:
North America: 1-800-447-4369
Latin America: (+55) 11-5188-9222
Europe: (+32) 3-450-2240
Pacific: +60 3 7958 3392
www.dowwaterandprocess.com

Notice: The use of this product in and of itself does not necessarily guarantee the removal of cysts and pathogens from water. Effective cyst and pathogen reduction is dependent on the complete system design and on the operation and maintenance of the system.

Notice: No freedom from any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where Dow is represented. The claims made may not have been approved for use in all countries. Dow assumes no obligation or liability for the information in this document. References to "Dow" or the "Company" mean the Dow legal entity selling the products to Customer unless otherwise expressly noted. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

™® Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow
Form No. 609-02216-1010

LC HR-4040-OPTIONAL

Product Information

DOW FILMTEC™ Membranes

Large Commercial 4040 Reverse Osmosis Elements

Features

DOW FILMTEC™ LC 4040 product range are available to meet a wide variety of customer needs in commercial applications, from producing high purity water to delivering low total system costs. Dow's fully automated element production enables the most consistent products in the industry that minimizes the total cost of ownership of water treatment systems.

- LC HR-4040 produces high quality water with our state of the art RO membrane.
- LC LE-4040 delivers high quality water at low pressure at harsh water conditions, using Dow's innovative, proprietary technology for low energy applications.

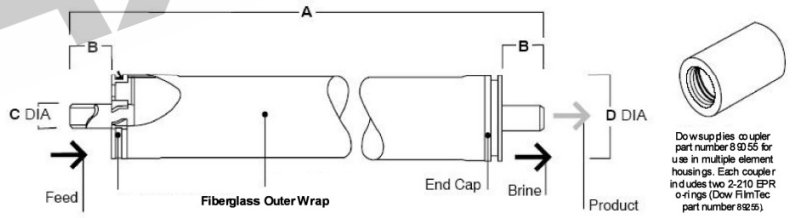
Product Specifications

Product	Part Number Dry (Wet)	Feed Spacer Thickness (mil)	Active Area – ft^2 (m^2)	Permeate Flow Rate gpd (m^3/d)	Min. Salt Rejection (%)	Stabilized Salt Rejection (%)
LC HR-4040	343771 / (343770)	28	94 (8.7)	2900 (11)	99.5	99.7
LC LE-4040	356603 / (356602)	28	94 (8.7)	2500 (9.5)	99.1	99.2

1. Permeate flow and salt rejection based on the following test conditions: 2000 ppm NaCl, 77°F (25°C), 15% recovery, pH 8, and applied pressure 225 psig for LC HR and 125 psig for LC LE
2. Permeate flows for individual elements may vary +/-15%.
3. For the purpose of improvement, specifications may be updated periodically.

LC HR-4040	Solute	NH_4^+	NO_3^-	SiO_2	Boron
	Stabilized rejection (%)	98.8	98.2	99.8	80.0

Figure 1



Product	A Inches (mm)	B Inches (mm)	C Inches (mm)	D Inches (mm)
LC HR-4040 and LC LE-4040	40.00 (1016)	1.05 (25.7)	0.75 (19)	3.9 (99)

1. Refer to DOW FILMTEC™ Design Guidelines for multiple-element systems
2. LC HR-4040 and LC HRLE-4040 elements fit nominal 4-inch I.D. pressure vessel.

™® Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

AXEON®

Operating Limits

Membrane type	Polyamide Thin-Film Composite
Maximum operating temperature[a]	113°F (45°C)
Maximum operating pressure	600 psig (41 bar)
Maximum pressure drop	15 psig (1.0 bar)
Maximum feed flow rate, gpm (m^3/h)	16 gpm (3.6 (m^3/h))
pH range, continuous operation[a]	2 - 11
pH range, short-term cleaning[b]	1 – 13
Maximum Feed Silt Density Index	SDI 5
Free chlorine concentration[c]	< 0.1 ppm

a. Maximum temperature for continuous operation above PH 10 is 95°F (35°C).

b. Refer to Cleaning Guidelines in specification sheet 609-23010.

c. Under certain conditions, the presence of free chlorine and other oxidizing agents will cause premature membrane failure. Since oxidation damage is not covered under warranty, Dow recommends removing residual free chlorine and other oxidants by pretreatment prior to membrane exposure. Please refer to technical bulletin 609-22010 for more information.

General Information

Proper start-up of reverse osmosis water treatment systems is essential to prepare the membranes for operating service and to prevent membrane damage due to overfeeding or hydraulic shock. Following the proper start-up sequence also helps ensure that system operating parameters conform to design specifications so that system water quality and productivity goals can be achieved.
Before initiating system start-up procedures, membrane pretreatment, loading of the membrane elements, instrument calibration and other system checks should be completed.
Please refer to the application information literature entitled "Start-Up Sequence" (Form No. 609-02077) for more information.

Operation Guidelines

Avoid any abrupt pressure or cross-flow variations on the spiral elements during start-up, shutdown, cleaning or other sequences to prevent possible membrane damage. During start-up, a gradual change from a standstill to operating state is recommended as follows:

- Feed pressure should be increased gradually over a 30-60 second time frame.
- Cross-flow velocity at set operating point should be achieved gradually over 15-20 seconds.
- Permeate obtained from first hour of operation should be discarded.

Important Information

Keep elements moist at all times after initial wetting.
If operating limits and guidelines given in this Product Bulletin are not strictly followed, the limited warranty in Form No. 609-35010 will be null and void.
To prevent biological growth during prolonged system shutdowns, it is recommended that membrane elements be immersed in a preservative solution.
The customer is fully responsible for the effects of incompatible chemicals and lubricants on elements.
Maximum pressure drop across an entire pressure vessel (housing) is 50 psi (3.4 bar).
Avoid static permeate-side backpressure at all times.

Regulatory Note

These membranes may be subject to drinking water application restrictions in some countries: please check the application status before use and sale.

DOW FILMTEC™ Membranes
For more information about DOW FILMTEC membranes, call the Dow Water & Process Solutions business:
North America: 1-800-447-4369
Latin America: (+55) 11-5188-9222
Europe: (+32) 3-450-2240
Pacific: +60 3 7958 3392
www.dowwaterandprocess.com

Notice: The use of this product in and of itself does not necessarily guarantee the removal of cysts and pathogens from water. Effective cyst and pathogen reduction is dependent on the complete system design and on the operation and maintenance of the system.

Notice: No freedom from any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where Dow is represented. The claims made may not have been approved for use in all countries. Dow assumes no obligation or liability for the information in this document. References to "Dow" or the "Company" mean the Dow legal entity selling the products to Customer unless otherwise expressly noted. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

™® Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

AXEON®

R2-1140, R2-2140, R2-3140, R2-4140, R2-5140, R2-6140

SYSTEM IDENTIFICATION

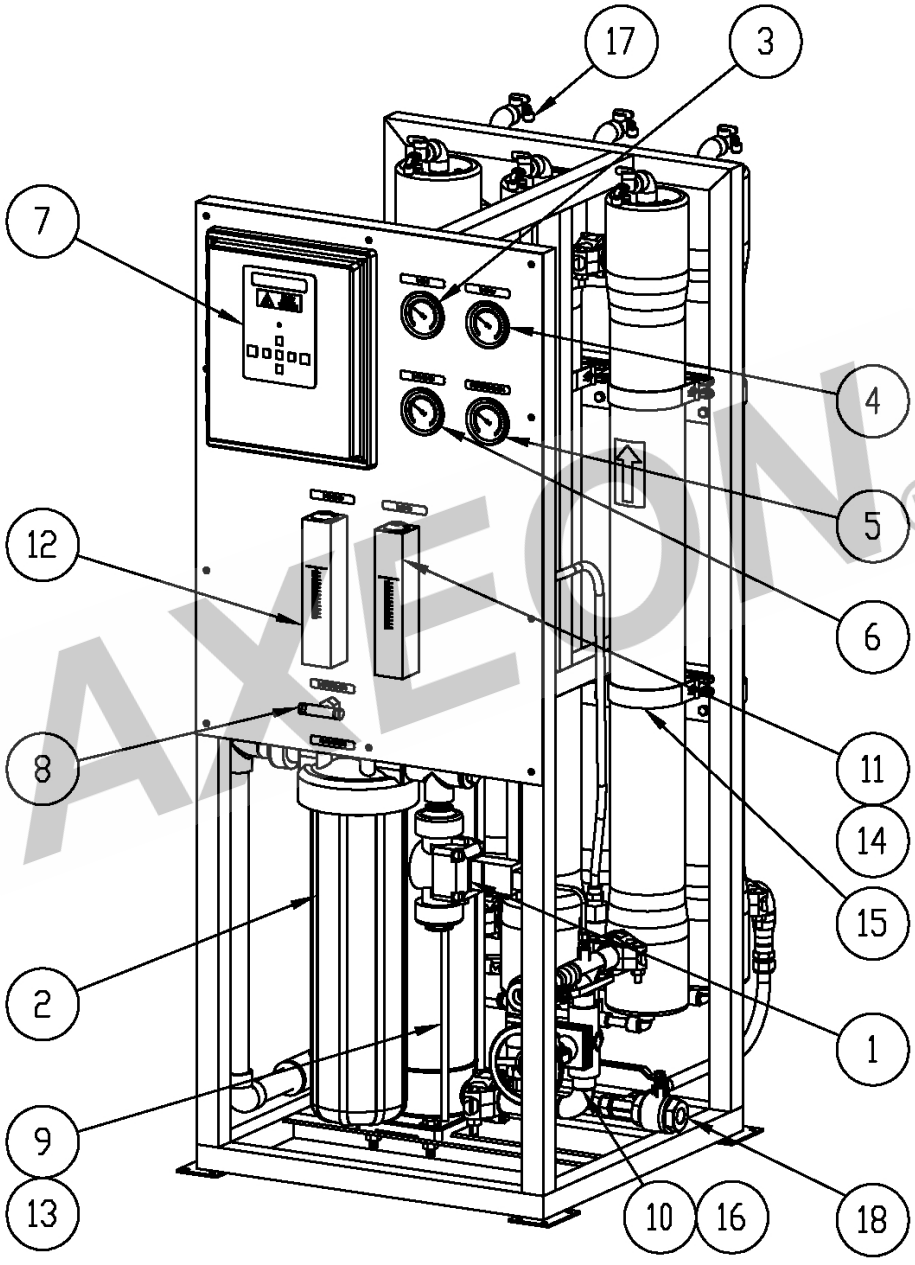


FIGURE 1A

NUMBER IDENTIFICATION

1. **SOLENOID VALVE** – TURNS FEED WATER ON/OFF
2. **5 MICRON SEDIMENT** – REDUCES PARTICULATES
3. **PRESSURE GAUGE** – MEASURES FEED PRESSURE
4. **PRESSURE GAUGE** – MEASURES PRESSURE AFTER FILTER
5. **PRESSURE GAUGE** – MEASURES PUMP PRESSURE
6. **PRESSURE GAUGE** – MEASURES CONCENTRATE PRESSURE
7. **COMPUTER CONTROLLER** – CONTROLS RO SYSTEM FUNCTIONS
8. **CONCENTRATE VALVE**– CONTROLS FLOW OF CONCENTRATE (WASTE) WATER
9. **RO PUMP AND MOTOR** – PRESSURIZES RO SYSTEM
10. **THROTTLE VALVE** – CONTROLS FLOW OF PUMP
11. **FLOW METER** – MEASURES FLOW OF PERMEATE WATER
12. **FLOW METER** – MEASURES FLOW OF CONCENTRATE (WASTE) WATER
13. **LOW PRESSURE SWITCH** – TURNS OFF RO PUMP WHEN FEED PRESSURE FALLS BELOW SET POINT
14. **PERMEATE CHECK VALVE** – PROTECTS MEMBRANE ELEMENTS FROM BACKPRESSURE
15. **PRESSURE VESSELS** – HOUSES MEMBRANE ELEMENTS
16. **HIGH PRESSURE SWITCH** – TURNS THE PUMP OFF AT A PRE-DETERMINED HIGH PSI PUMP PRESSURE
17. **PERMEATE SAMPLE VALVE**- MEASURES THE QUALITY OF EACH MEMBRANE
18. **CLEANING PORT VALVE**- PROVIDES ACESS TO CLEAN THE MEMBRANES

AXEON®

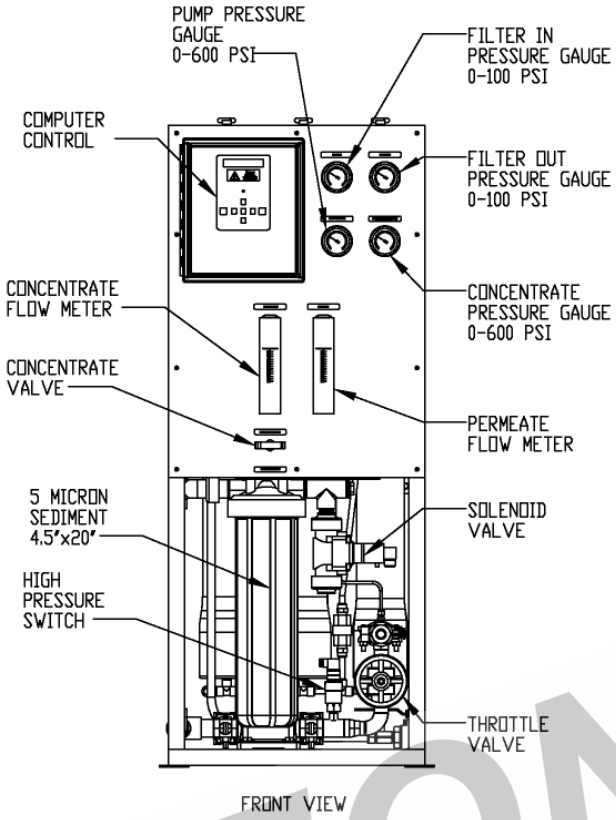


FIGURE 1B

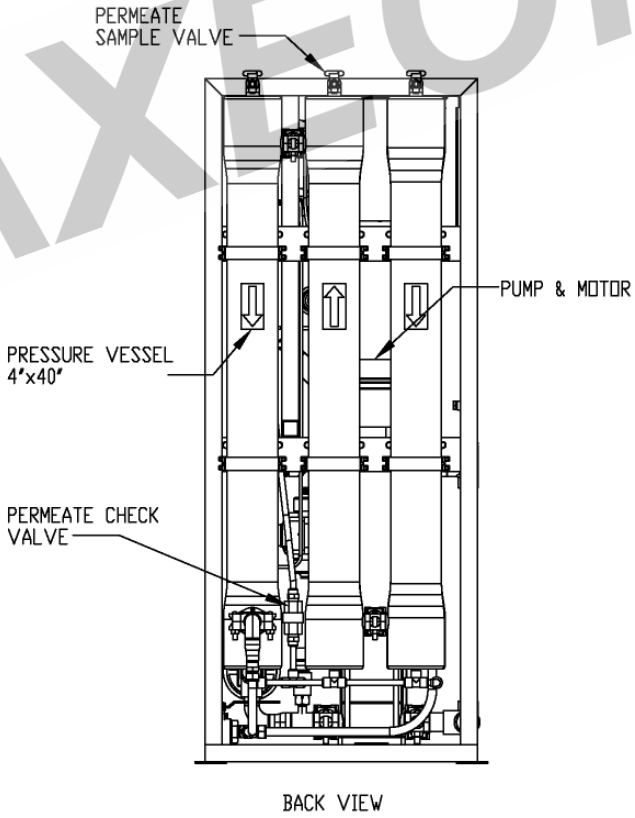


FIGURE 1C

AXEON®

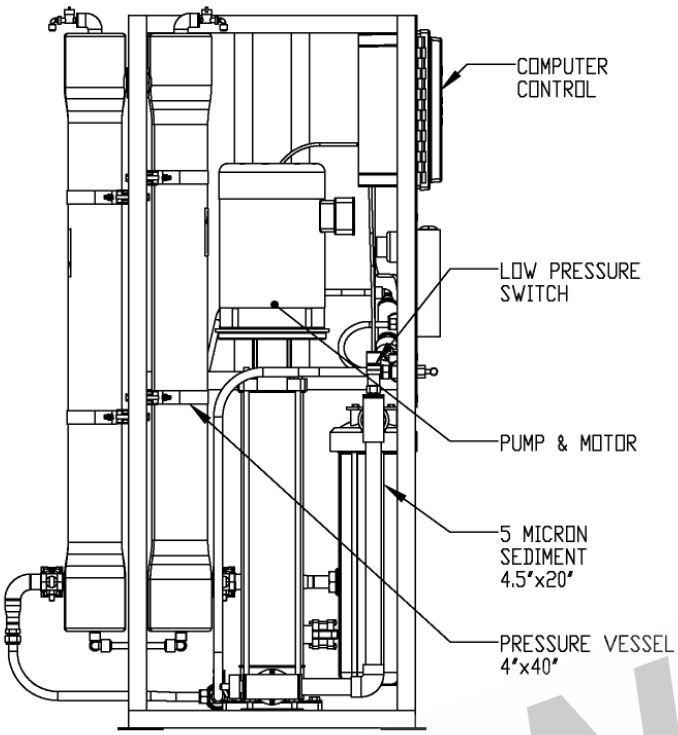


FIGURE 1D

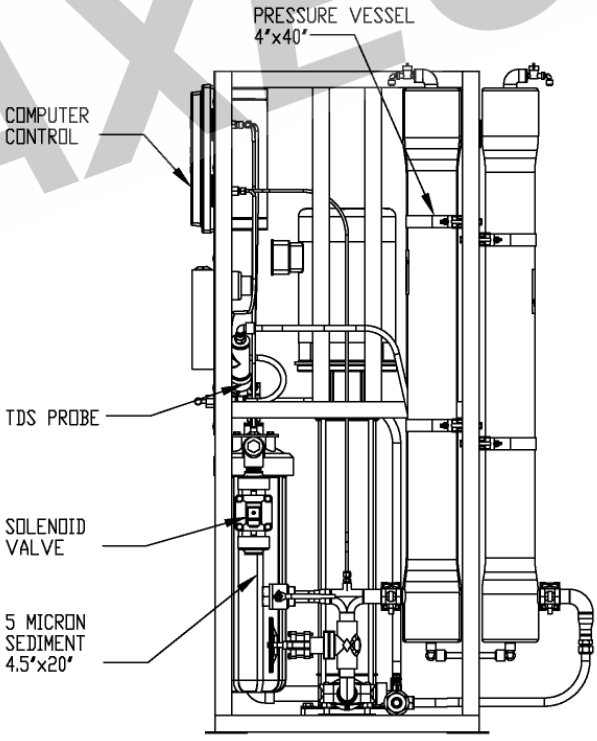


FIGURE 1E

AXEON®

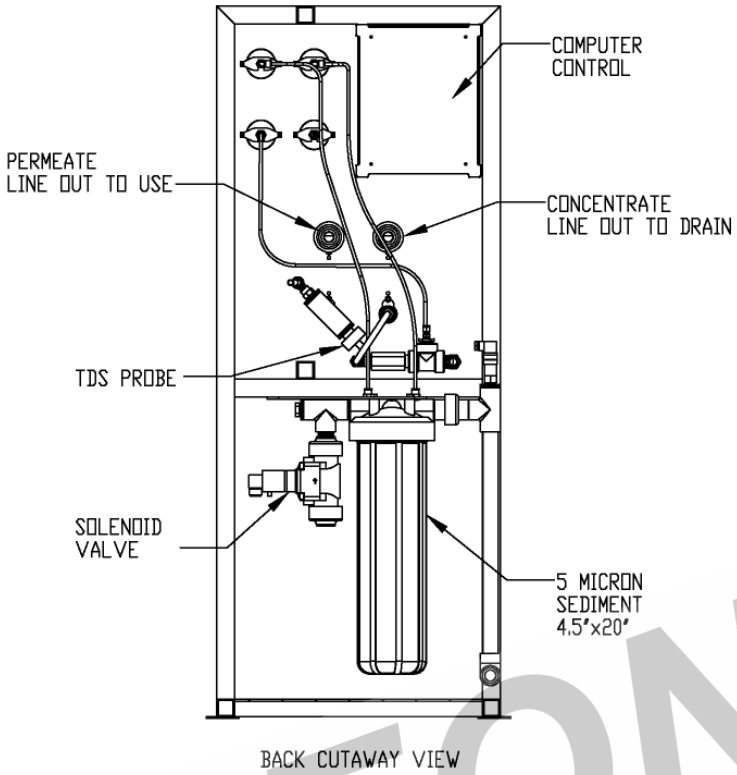


FIGURE 1F

Note: A portion of the frame has been removed to expose components.

AXEON®

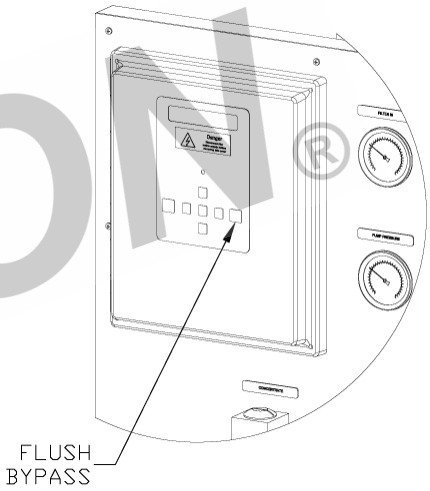
SYSTEM PURGING

Carefully inspect your system before initial start-up. Check that all plumbing and electrical connections are not loose or have not come undone during shipment. A User's Manual, Test Results, and Filter Housing Wrench will accompany your R2-Series Reverse Osmosis System.

NOTE: LEAVE THE POWER TO THE SYSTEM OFF FOR THIS PROCEDURE.

1. Redirect permeate water to the drain for this procedure.
2. Fully open the concentrate valve (Counter Clockwise). (Figure 1B, Page. 15)
3. Fully open the throttle valve (Counter Clockwise). (Figure 1B, Page. 15)
4. Press and hold the reset button on the controller for three seconds to activave the solenoid bypass feature.

INITIAL START-UP



1. Maintain the permeate water line to drain for this procedure.
2. Fully open the concentrate valve (Counter Clockwise). (Figure 1B, Page. 15)
3. Adjust the throttle valve at 50% open (Figure 1B, Page. 15)
4. Turn the RO system on and adjust the concentrate (waste) valve and the throttle valve to the specified system's production, recovery and operating pressure. (Figure 1B, Page. 15)
5. Inspect the system for leaks.
6. Allow the system to run 30 minutes to flush the preservative solution from the system.
7. After 30 minutes, shut down the system.
8. Re-direct the permeate water back to the tank or point-of-use.
9. Record the readings daily for a week; after one week record the readings regularly.

AXEON®

DESIGN BASIS FOR R2-1140, R2-2140, R2-3140, R2-4140, R2-5140, R2-6140

Specifications

Models	R2-1140	R2-2140	R2-3140	R2-4140	R2-5140	R2-6140
Design						
Configuration	Single Pass	Single Pass	Single Pass	Single Pass	Single Pass	Single Pass
Feed Water Source ***	TDS<10,000 ppm	TDS<10,000 ppm	TDS<10,000 ppm	TDS<10,000 ppm	TDS<10,000 ppm	TDS<10,000 ppm
Standard Recovery Rate	15 – 25%	30 – 40%	40 – 50%	40 – 55%	40 – 60%	40 – 65%
Rejection and Flow Rates						
Nominal Salt Rejection %	99.2%	99.2%	99.2%	99.2%	99.2%	99.2%
Permeate Flow* gpm (lpm)	1.04 (3.94)	2.08 (7.89)	3.13 (11.83)	4.17 (15.77)	5.21 (19.72)	6.25 (23.66)
Minimum Feed Flow gpm (lpm)	4.04 (15.3)	5.08 (19.2)	6.13 (23.2)	7.17 (27.1)	8.21 (31.1)	9.25 (35.0)
Maximum Feed Flow gpm (lpm)	14.00 (53.0)	14.00 (53.0)	14.00 (53.0)	14.00 (53.0)	14.00 (53.0)	14.00 (53.0)
Minimum Concentrate Flow gpm (lpm)	3.00 (11.36)	3.00 (11.36)	3.00 (11.36)	3.00 (11.36)	3.00 (11.36)	3.00 (11.36)
Connections						
Feed inch	1 FNPT	1 FNPT	1 FNPT	1 FNPT	1 FNPT	1 FNPT
Permeate inch	¾ FNPT	¾ FNPT	¾ FNPT	1 FNPT	1 FNPT	1 FNPT
Concentrate inch	¾ FNPT	¾ FNPT	¾ FNPT	1 FNPT	1 FNPT	1 FNPT
CIP inch	¾ FNPT	¾ FNPT	¾ FNPT	¾ FNPT	¾ FNPT	¾ FNPT
Membranes						
Membrane Per Vessel	1	1	1	1	1	1
Membrane Quantity	1	2	3	4	5	6
Membrane Size	4040	4040	4040	4040	4040	4040
Vessels						
Vessel Array	1	1:1	1:1:1	1:1:1:1	1:1:1:1:1	1:1:1:1:1:1
Vessel Quantity	1	2	3	4	5	6
Pumps						
Pump Type	Multi-Stage	Multi-Stage	Multi-Stage	Multi-Stage	Multi-Stage	Multi-Stage
Motor HP (kw)	3	3	3	5	5	5
RPM @ 60/50 Hz	3450	3450	3450	3450	3450	3450
Electrical						
Standard Voltage	220V, 60Hz, 1Ph, 14.6A	220V, 60Hz, 1Ph, 14.6A	220V, 60Hz, 1Ph, 14.6A	220V, 60Hz, 3Ph, 13.6A	220V, 60Hz, 3Ph, 13.6A	220V, 60Hz, 3Ph, 13.6A
Voltage Options	220V, 50Hz, 1Ph, 17.4A 220V, 50Hz, 3Ph, 10.6A 220V, 60Hz, 3Ph, 9A 460V, 60Hz, 3Ph, 5A	220V, 50Hz, 1Ph, 17.4A 220V, 50Hz, 3Ph, 10.6A 220V, 60Hz, 3Ph, 9A 460V, 60Hz, 3Ph, 5A	220V, 50Hz, 1Ph, 17.4A 220V, 50Hz, 3Ph, 10.6A 220V, 60Hz, 3Ph, 9A 460V, 60Hz, 3Ph, 5A	220V, 50Hz, 3Ph, 16.1A 460V, 60Hz, 3Ph, 7A	220V, 50Hz, 3Ph, 16.1A 460V, 60Hz, 3Ph, 7A	220V, 50Hz, 3Ph, 16.1A 460V, 60Hz, 3Ph, 7A
Systems Dimensions **						
L x W x H inch (cm)	27 x 26 x 61 (69 x 66 x 155)	27 x 26 x 61 (69 x 66 x 155)	30 x 26 x 61 (75 x 66 x 155)	32 x 26 x 61 (80 x 66 x 155)	32 x 26 x 61 (80 x 66 x 155)	37 x 26 x 61 (94 x 66 x 155)
Weight lb. (kg)	560 (250)	590 (270)	620 (280)	650 (300)	680 (310)	700 (320)

* Product flow and recovery rates are based on equipment test parameters.
** Does not include operating space requirements.
*** Treatment ability of the RO system is dependent on feed water quality. Performance projections must be run for each installation.

WARNING: NEVER EXCEED THE SYSTEM'S MAXIMUM PRESSURE RATING.

AXEON®

OPERATING DOs AND DON'Ts

DO:

- Change the cartridge filters regularly
- Monitor the system and keep a daily log
- Adjust the system recovery to the recommended value
- Always feed the pump with filtered water

DON'T:

- Permit chlorine to be present in the feed water
- Shut down the system for extended periods without preservation
- Close the control valves completely
- Operate the system with insufficient feed flow
- Operate the pump dry

AXEON®

OPERATION AND MAINTENANCE

The reverse osmosis process causes the concentration of impurities. The impurities may precipitate (fall out of solution) when their concentration reaches saturation levels.

NOTE: PRECIPITATION CAN SCALE OR FOUL MEMBRANES AND MUST BE PREVENTED.

Check your feed water chemistry and pre-treatment. If necessary, consult with your local dealer or distributor.

PRE-FILTER PRESSURE GAUGES

Pre-filter gauges measure the feed water pressure when it enters and exits the pre-filter. A pressure differential of 10 - 15 psi or more on the two pressure gauges indicates that the pre-filters require servicing.

PUMP PRESSURE AND CONCENTRATE PRESSURE GAUGES

Pump and concentrate gauges measure the pressure of water exiting the multistage pump and the pressure of concentrate water as it exits the pressure vessel array. Comparison of the pump output and concentrate pressures allows for the establishment of a baseline pressure differential. If the pressure differential increases over time from this baseline, it would be an indication that the reverse osmosis membranes need to be inspected.

PERMEATE (PRODUCT) FLOW METER AND CONCENTRATE (WASTE) FLOW METER

The permeate and concentrate flow meters indicate the flow rates of the permeate and concentrate water. The measurements, when added together, also indicate the feed water flow rate or total flow rate.

LOW PRESSURE SWITCH

The low pressure switch shuts off the system when the feed water pressure drops below 5 PSI, preventing damage to the pump. The system restarts automatically when there is a constant pressure of 35 PSI or more.

PUMP THROTTLE VALVE

The Pump Throttle Valve is installed as a standard feature on the R2-Series reverse osmosis systems. It provides an adjustment for pump pressure. As the feed water temperature decreases, and/or the feed water TDS increases, the system will require a higher operating pressure to produce the specified permeate flow.

ADJUSTING THE THROTTLE VALVE

To decrease the pressure, turn the handle clockwise. To increase the pressure turn the handle counter clockwise. (Figure 3, Page 21)

AXEON®

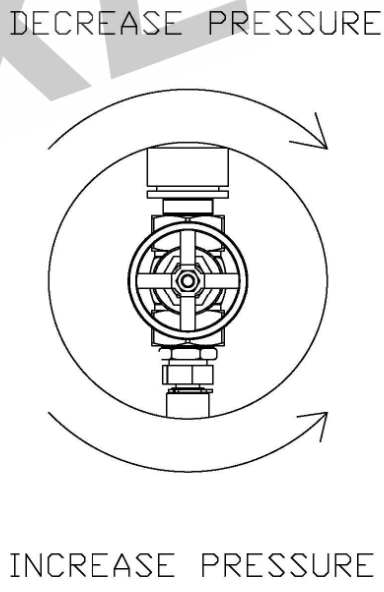


FIGURE 3

MEMBRANE REMOVAL AND REPLACEMENT

Replacing membranes in the pressure vessels is an easy process if you have the proper information and tools at hand. Please refer to the following instructions when removing and replacing membrane elements:

WARNING: ALL PRESSURE GAUGES MUST READ ZERO BEFORE PROCEEDING. BEFORE ATTEMPTING, DISCONNECT THE POWER FROM THE SYSTEM AND BLEED ALL WATER PRESSURE FROM THE SYSTEM.

1. Remove the end plugs from the top of the pressure vessels. This is done by removing the two half-moon retaining disks using a #5 Allen wrench; the end plugs should then freely slide out of the pressure vessel.

2. Remove the replacement membrane element(s) from the shipping box; the membrane(s) should be contained within a plastic oxygen barrier bag.

NOTE: WEAR GLOVES FOR THE FOLLOWING STEPS IN ORDER NOT TO CONTAMINATE THE MEMBRANE.

3. Cut the bag open as close as possible to the seal at one end of the bag, so the bag may be re-used if necessary.

4. Make sure that all parts are clean and free from dirt. Examine the brine seal, and permeate tube for nicks or cuts. Replace the O-rings or brine seal if damaged.

5. Flow directions should be observed for installation of each element into their respective pressure vessels.

AXEON®

REPLACING THE MEMBRANE ELEMENT:

WARNING: THE BRINE SEAL MUST BE IN THE SAME POSITION FOR EACH MEMBRANE ELEMENT HOUSING, SO MARK EACH HOUSING PRIOR TO REMOVING THE MEMBRANE ELEMENTS. THE BRINE SEAL IS A RUBBER SEAL THAT PROTRUDES ON ONE SIDE OF THE MEMBRANE AND IS ALWAYS ON THE FEED SIDE OF THE MEMBRANE ELEMENT.

1. Remove one membrane element at a time from the pressure vessels, from the top of each housing. Long nose pliers may be necessary to pull the old membrane element out of the membrane element housing.

2. Lubricate the brine seal with a non-petroleum based lubricant, such as Dow Corning® 111.

3. Install membranes with brine seal location depicted in (Figure 4, Page 27).

4. For brine seals that are on the bottom: At a slight angle insert the membrane while slightly rotating the element being careful not to tear or flip the brine seal. A slow twisting motion should be used to insert the membrane element, for every couple of turns pull up ½" to make sure the brine seal doesn't flip.

5. With a smooth and constant motion, push the membrane element into the housing so the brine seal enters the housing without coming out of the brine seal groove.

6. Re-install the end plugs by gently twisting the end cap while pushing it onto the housing. Ensure that you do not pinch or fatigue any O-rings while re-installing the end plug. Push the end plug on until the outer diameter of the plug is flush with the outer diameter of the pressure vessel.

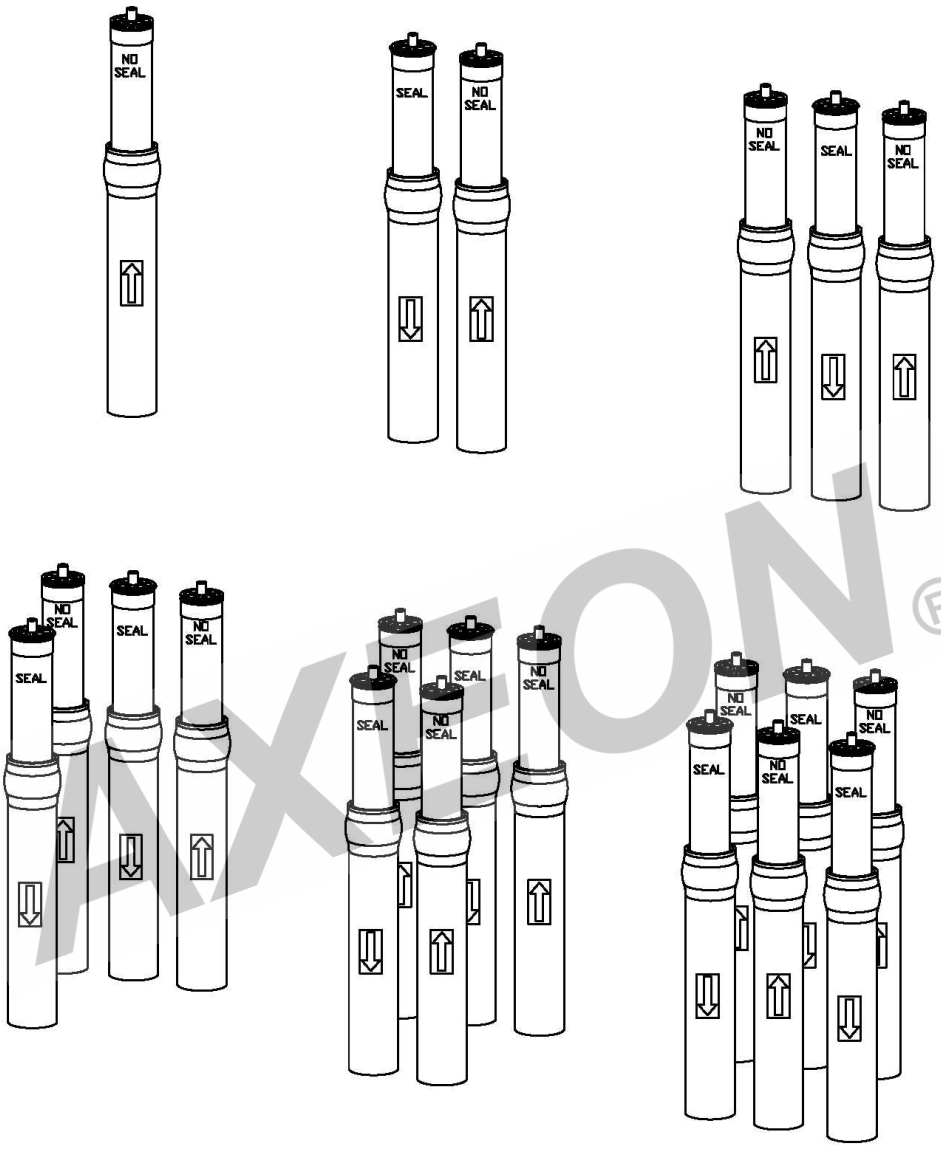
7. Insert the two half-moon retaining disks until they are fully seated. Subsequently fasten using a #5 Allen wrench.

8. Reconnect any fittings that may have been disconnected when the membrane pressure vessels were disassembled.

9. To Start-Up the system, please refer to the Initial Start-Up section of this manual. (See page 18)

AXEON®

CAUTION: WET MEMBRANES ARE SHIPPED IN A PRESERVATIVE SOLUTION. THE MEMBRANES MUST BE FLUSHED FOR AT LEAST 30 MINUTES TO REMOVE THE PRESERVATIVE FROM THE MEMBRANE. DISCARD ALL OF THE PERMEATE AND CONCENTRATE, WHICH IS PRODUCED DURING THE FLUSH PERIOD.



AXEON®

FIGURE 4

View from the back of R2-1140, R2-2140, R2-3140, R2-4140, R2-5140, R2-6140 reverse osmosis system.

FLUSHING THE SYSTEM

The system should be flushed weekly to remove sediment from the surface of the membranes. To manually flush the system, follow the preceding steps:

1. The system must be operating during the flush procedure.
2. Fully open the concentrate valve. (Figure 1B, Page. 15)
3. Allow the system to run for 10 to 20 minutes.
4. After 10 to 20 minutes, close the concentrate valve to its previous setting. Ensure the proper concentrate flow rate is going to the drain.
5. The system is now ready to operate.

PREPARING UNIT FOR STORAGE OR SHIPMENT

PRIOR TO SHIPPING OR STORING YOUR SYSTEM, THE SYSTEM SHOULD BE CLEANED WITH AN APPROPRIATE CLEANER, FLUSHED WITH WATER, AND PROTECTED FROM BIOLOGICAL ATTACK WITH AN APPROPRIATE SOLUTION FOR MEMBRANE ELEMENTS. THE MEMBRANE HOUSING(S) AND PLUMBING LINES OF THE SYSTEM MUST BE COMPLETELY DRAINED. ANY WATER REMAINING IN THE PLUMBING OF A SYSTEM MAY FREEZE, CAUSING SERIOUS DAMAGE.

PREPARING SYSTEM FOR STORAGE:

1. Totally immerse the elements in the membrane housing in a solution of 2% membrane preservative, venting the air outside of the pressure vessels. Use the overflow technique: circulate the Memstor solution in such a way that the remaining air in the system is minimized after the recirculation is completed. After the pressure vessel is filled, the Memstor solution should be allowed to overflow through an opening located higher than the upper end of the highest pressure vessel being filled.
2. Separate the preservation solution from the air outside by closing all valves.
3. Repeat this process at least once a month.

During the shutdown period, the plant must be kept frost-free, or the temperature must not exceed 113°F (45°C).

PREPARING UNIT FOR SHIPMENT:

4. Disconnect the inlet, concentrate, pre-filter, and permeate plumbing.
5. Drain all water from the pre-filter cartridge housings by unscrewing the housings, removing the pre-filter cartridges, and drain the water from the housings.
6. Disconnect the tubing from the connectors on the permeate and concentrate inlets and outlets.

7. Fully open the concentrate valve.
8. Drain the flow meters.
9. Allow the system to drain for a minimum of eight hours or until the opened ports quit dripping.
10. After draining is complete, reconnect all of the plumbing.

AXEON®

REVERSE OSMOSIS TROUBLESHOOTING

SYMPTOMS	POSSIBLE CAUSES	CORRECTIVE ACTION
LOW INLET PRESSURE	Low inlet pressure	Increase inlet pressure
	Cartridge filters plugged	Change filters
	Solenoid valve malfunction	Replace sol. valve and/or coil
	Concentrate valve might be damaged	Replace needle valve
	Leaks	Fix any visible leaks
LOW PERMEATE FLOW	Cold feed water	See temperature correction sheet
	Low operating pressure	Adjust throttle and concentrate valve
	Defective membrane brine seal/ membrane installed backwards	Replace brine seal and / or reposition membranes
	Fouled or scaled membrane	Clean membranes
	Damaged product tube o-rings	Inspect and/or replace
HIGH PERMEATE FLOW	Damaged or oxidized membrane	Replace membrane
	Exceeding maximum feed water temperature	See temperature correction sheet
	Low operating pressure	Adjust concentrate valve
POOR PERMEATE QUALITY	Damage product tube o-rings	Inspect and/or replace
	Damaged or oxidized membrane	Replace membrane
	Metal Oxide Fouling	Improve pretreatment to remove metals. Clean with Acid Cleaners.
MEMBRANE FOULING	Colloidal Fouling	Optimize pretreatment for colloid removal. Clean with high pH anionic cleaners.
	Scaling (CaSO4, CaSO3, BaSO4, SiO2)	Increase acid addition and antiscalant dosage for CaVO3 and CaCO4. Reduce recovery. Clean with Acid Cleaners
	Biological Fouling	Shock dosage of Sodium Bi-Sulfate. Continuous feed of Sodium Bi-Sulfate at reduced pH. Chlorination and de-chlorination. Replace cartridge filters.
	Organic Fouling	Activated Carbon or other pretreatment. Clean with high pH cleaner.
	Chlorine Oxidation	Check Chlorine feed equipment and de-chlorination system.
	Abrasion of membrane by Crystalline Material	Improve pretreatment. Check all filters for media leakage.

AXEON®

ABNORMAL PERMEATE FLOW

As time progresses, the efficiency of the membrane will be reduced. In general, the salt rejection does not change significantly until two or three years after installation when operated on properly pretreated feed water. The permeate flow rate will begin to decline slightly after one year of operation, but can be extended with diligent flushing and cleaning of the system. A high pH and/or precipitation of hardness can cause premature loss in rejection.

Permeate flow should be within 20% of the rated production, after correcting the feed water temperatures above or below 77°F. Check your permeate flow meter to determine the permeate flow rate.

NOTE: TO DETERMINE THE TEMPERATURE CORRECTION FACTOR, LOCATE THE TEMPERATURE CORRECTION TABLE ON THE FOLLOWING PAGE.

AXEON®

TEMPERATURE CORRECTION FACTORS FOR MEMBRANE

Temperature °F (°C)	Temperature Correction Factor	Temperature °F (°C)	Temperature Correction Factor	Temperature °F (°C)	Temperature Correction Factor	Temperature °F (°C)	Temperature Correction Factor	Temperature °F (°C)	Temperature Correction Factor
50.0 (10.0)	1.711	57.2 (14.0)	1.475	64.4 (18.0)	1.276	71.6 (22.0)	1.109	78.8 (26.0)	0.971
50.2 (10.1)	1.705	57.4 (14.1)	1.469	64.6 (18.1)	1.272	71.8 (22.1)	1.105	79.0 (26.1)	0.968
50.4 (10.2)	1.698	57.6 (14.2)	1.464	64.8 (18.2)	1.267	72.0 (22.2)	1.101	79.2 (26.2)	0.965
50.5 (10.3)	1.692	57.7 (14.3)	1.459	64.9 (18.3)	1.262	72.1 (22.3)	1.097	79.3 (26.3)	0.962
50.7 (10.4)	1.686	57.9 (14.4)	1.453	65.1 (18.4)	1.258	72.3 (22.4)	1.093	79.5 (26.4)	0.959
50.9 (10.5)	1.679	58.1 (14.5)	1.448	65.3 (18.5)	1.254	72.5 (22.5)	1.090	79.7 (26.5)	0.957
51.1 (10.6)	1.673	58.3 (14.6)	1.443	65.5 (18.6)	1.249	72.7 (22.6)	1.086	79.9 (26.6)	0.954
51.3 (10.7)	1.667	58.5 (14.7)	1.437	65.7 (18.7)	1.245	72.9 (22.7)	1.082	80.1 (26.7)	0.951
51.4 (10.8)	1.660	58.6 (14.8)	1.432	65.8 (18.8)	1.240	73.0 (22.8)	1.078	80.2 (26.8)	0.948
51.6 (10.9)	1.654	58.8 (14.9)	1.427	66.0 (18.9)	1.236	73.2 (22.9)	1.075	80.4 (26.9)	0.945
51.8 (11.0)	1.648	59.0 (15.0)	1.422	66.2 (19.0)	1.232	73.4 (23.0)	1.071	80.6 (27.0)	0.943
52.0 (11.1)	1.642	59.2 (15.1)	1.417	66.4 (19.1)	1.227	73.6 (23.1)	1.067	80.8 (27.1)	0.940
52.2 (11.2)	1.636	59.4 (15.2)	1.411	66.6 (19.2)	1.223	73.8 (23.2)	1.064	81.0 (27.2)	0.937
52.3 (11.3)	1.630	59.5 (15.3)	1.406	66.7 (19.3)	1.219	73.9 (23.3)	1.060	81.1 (27.3)	0.934
52.5 (11.4)	1.624	59.7 (15.4)	1.401	66.9 (19.4)	1.214	74.1 (23.4)	1.056	81.3 (27.4)	0.932
52.7 (11.5)	1.618	59.9 (15.5)	1.396	67.1 (19.5)	1.210	74.3 (23.5)	1.053	81.5 (27.5)	0.929
52.9 (11.6)	1.611	60.1 (15.6)	1.391	67.3 (19.6)	1.206	74.5 (23.6)	1.049	81.7 (27.6)	0.926
53.1 (11.7)	1.605	60.3 (15.7)	1.386	67.5 (19.7)	1.201	74.7 (23.7)	1.045	81.9 (27.7)	0.924
53.2 (11.8)	1.600	60.4 (15.8)	1.381	67.6 (19.8)	1.197	74.8 (23.8)	1.042	82.0 (27.8)	0.921
53.4 (11.9)	1.594	60.6 (15.9)	1.376	67.8 (19.9)	1.193	75.0 (23.9)	1.038	82.2 (27.9)	0.918
53.6 (12.0)	1.588	60.8 (16.0)	1.371	68.0 (20.0)	1.189	75.2 (24.0)	1.035	82.4 (28.0)	0.915
53.8 (12.1)	1.582	61.0 (16.1)	1.366	68.2 (20.1)	1.185	75.4 (24.1)	1.031	82.6 (28.1)	0.913
54.0 (12.2)	1.576	61.2 (16.2)	1.361	68.4 (20.2)	1.180	75.6 (24.2)	1.028	82.8 (28.2)	0.910
54.1 (12.3)	1.570	61.3 (16.3)	1.356	68.5 (20.3)	1.176	75.7 (24.3)	1.024	82.9 (28.3)	0.908
54.3 (12.4)	1.564	61.5 (16.4)	1.351	68.7 (20.4)	1.172	75.9 (24.4)	1.021	83.1 (28.4)	0.905
54.5 (12.5)	1.558	61.7 (16.5)	1.347	68.9 (20.5)	1.168	76.1 (24.5)	1.017	83.3 (28.5)	0.902
54.7 (12.6)	1.553	61.9 (16.6)	1.342	69.1 (20.6)	1.164	76.3 (24.6)	1.014	83.5 (28.6)	0.900
54.9 (12.7)	1.547	62.1 (16.7)	1.337	69.3 (20.7)	1.160	76.5 (24.7)	1.010	83.7 (28.7)	0.897
55.0 (12.8)	1.541	62.2 (16.8)	1.332	69.4 (20.8)	1.156	76.6 (24.8)	1.007	83.8 (28.8)	0.894
55.2 (12.9)	1.536	62.4 (16.9)	1.327	69.6 (20.9)	1.152	76.8 (24.9)	1.003	84.0 (28.9)	0.892
55.4 (13.0)	1.530	62.6 (17.0)	1.323	69.8 (21.0)	1.148	77.0 (25.0)	1.000	84.2 (29.0)	0.889
55.6 (13.1)	1.524	62.8 (17.1)	1.318	70.0 (21.1)	1.144	77.2 (25.1)	0.997	84.4 (29.1)	0.887
55.8 (13.2)	1.519	63.0 (17.2)	1.313	70.2 (21.2)	1.140	77.4 (25.2)	0.994	84.6 (29.2)	0.884
55.9 (13.3)	1.513	63.1 (17.3)	1.308	70.3 (21.3)	1.136	77.5 (25.3)	0.991	84.7 (29.3)	0.882
56.1 (13.4)	1.508	63.3 (17.4)	1.304	70.5 (21.4)	1.132	77.7 (25.4)	0.988	84.9 (29.4)	0.879
56.3 (13.5)	1.502	63.5 (17.5)	1.299	70.7 (21.5)	1.128	77.9 (25.5)	0.985	85.1 (29.5)	0.877
56.5 (13.6)	1.496	63.7 (17.6)	1.294	70.9 (21.6)	1.124	78.1 (25.6)	0.982	85.3 (29.6)	0.874
56.7 (13.7)	1.491	63.9 (17.7)	1.290	71.1 (21.7)	1.120	78.3 (25.7)	0.979	85.5 (29.7)	0.871
56.8 (13.8)	1.486	64.0 (17.8)	1.285	71.2 (21.8)	1.116	78.4 (25.8)	0.977	85.6 (29.8)	0.869
57.0 (13.9)	1.480	64.2 (17.9)	1.281	71.4 (21.9)	1.112	78.6 (25.9)	0.974	85.8 (29.9)	0.866

°F = (°C x 9/5) + 32

Corrected Flow Rate = (Measured Flow Rate) * (TCF @ Feed Water Temp.)

AXEON®

Find the temperature correction factor (TCF) from the table below. Divide the rated permeate flow at 77°F by the temperature correction factor. The result is the permeate flow at the desired temperature. (See example on the next page). If a system is rated to produce 5 gpm of permeate water @ 77° F. The same system will produce more water at a higher temperature. It will also produce less water at a lower temperature. Use the temperature correction table to obtain the correct flow.

Example:

5 gpm @ 59˚ F (5÷1.42=3.52 gpm)

5 gpm @ 77˚ F (5÷1=5 gpm)

5 gpm @ 84˚ F (5÷0.89=5.62 gpm)

SERVICE ASSISTANCE

If service assistance is required, please complete the following process:

Contact your local dealer or distributor. Prior to making the call, have the following information available: system installation date, serial number, daily log sheets, current operating parameters (e.g. flow, operating pressures, pH, etc.), and a detailed description of the problem.

AXEON®

OPERATION

Company: _____

Location: _____

Week Of: _____

System Serial #: _____

Date of Start-Up: _____

Date of Last Cleaning: _____

DATE					
TIME					
HOUR OF OPERATION					
FILTER INLET PRESSURE (PSI)					
FILTER OUTLET PRESSURE (PSI)					
CONCENTRATE PRESSURE (PSI)					
PUMP DISCHARGE PRESSURE (PSI)					
FEED FLOW (GPM)					
PERMEATE FLOW (GPM)					
CONCENTRATE FLOW (GPM)					
RECYCLE FLOW (GPM)					
RECOVERY %					
FEED TEMPERATURE					
FEED TDS (PPM)					
PERMEATE TDS (PPM)					
REJECTION %					
FEED PH					
PERMEATE PH					
SCALE INHIBITOR FEED (PPM)					
IRON (mg/L)					
FREE CHLORINE (mg/L)					
HARDNESS (GPG $CaCO_3$)					

AXEON®

DRAWINGS

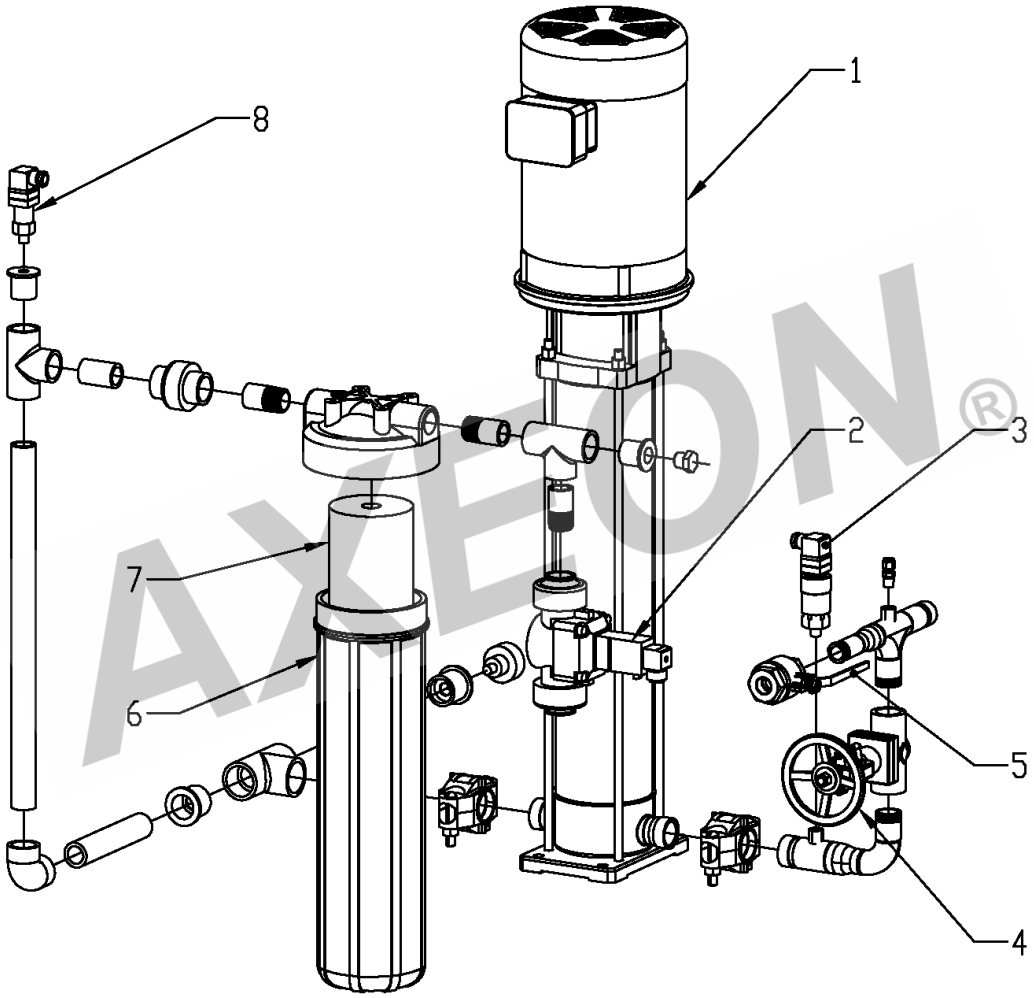


FIGURE 5

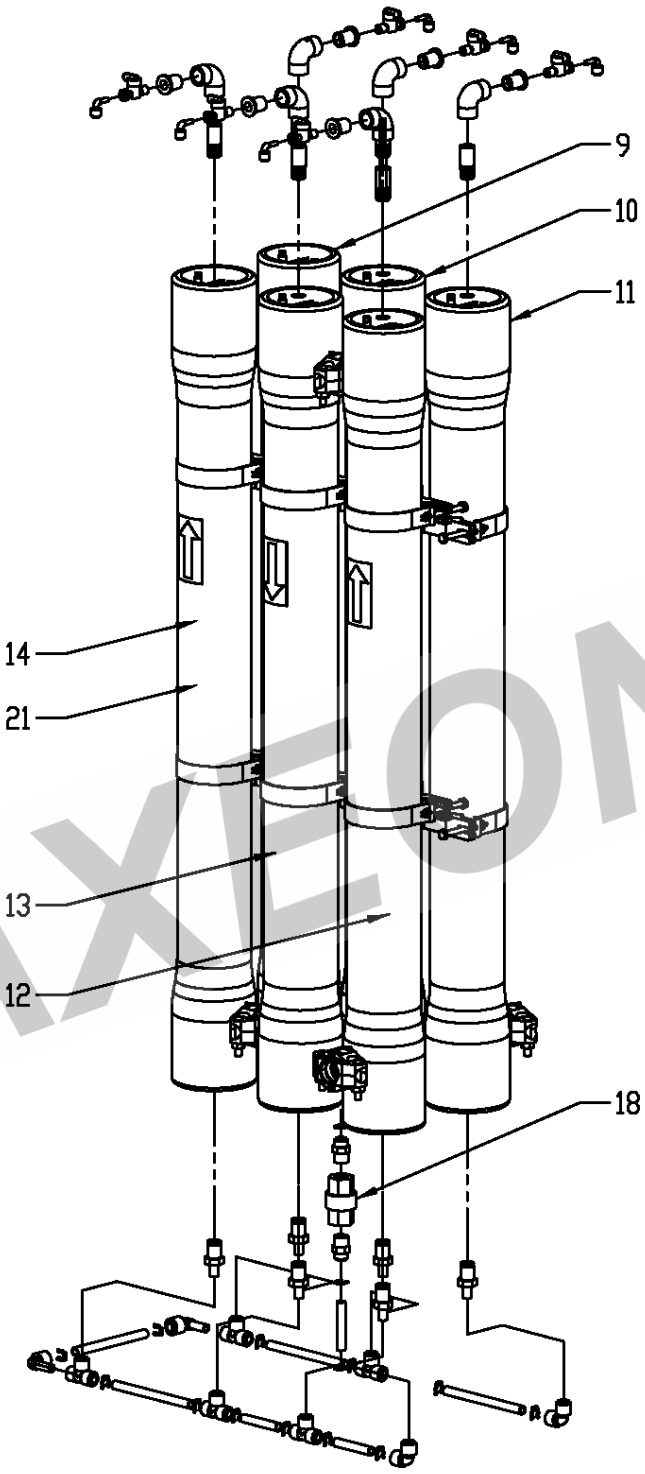
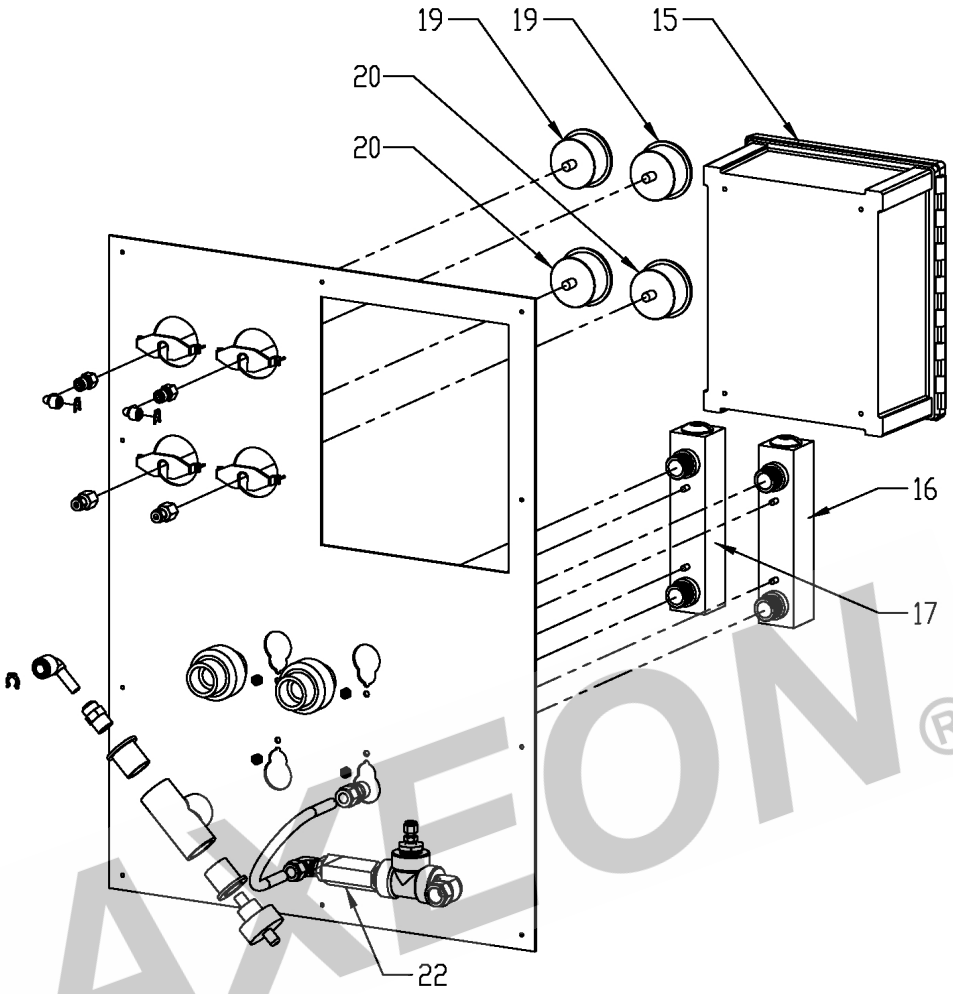


FIGURE 6



Note: A portion of the frame has been removed to expose components.

FIGURE 7

R2-1140 SYSTEM PART LIST

Item No.	Quantity	Part Number	Description
1	1	206420	PUMP, MULTISTAGE, 3 HP, 115-230V, 1PH, TEFC, 3SV20PA30/V09722
2	1	204914	VALVE, SOLENOID, N/C, UL, 220V, 1” FNPT, 3 METER CORD
3	1	205098	SWITCH, PRESSURE, HIGH, N/C 450PSI, ¼” MNPT, NASON
4	1	205903	VALVE, GLOBE, 316, 1" FNPT, 800LB
5	2	205113	VALVE, BALL, REDUCED PORT, ¾” FNPT, 316SS
6	1	203649	HOUSING, FILTER, BLK/BLU, 4.5”x 20”, 1” FNPT
7	1	200640	CARTRIDGE, SEDIMENT, POLYPRO, 4.5" X 20", 5 MIC
8	1	205097	SWITCH, PRESSURE, LOW, N/O 5PSI, ¼” MNPT, NASON
9	1	205589	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-18, ROPV
15	1	206350	CONTROLLER, COMPUTER, ROTROL S-150, 220V, 1PH, 12 X 10 BOX
16	1	200899	METER, FLOW, PM, 0-10 GPM, 1” MNPT x 1” MNPT
17	1	200898	METER, FLOW, PM, 0-5 GPM, 1/2" MNPT x 1/2" MNPT
18	1	200965	VALVE, CHECK, PP, 1/2" FNPT X 1/2" FNPT
19	2	205099	GAUGE, BKM, FILL, 0-100PSI/BAR, 2.5” DIA, ¼” MNPT, SS
20	2	205100	GAUGE, BKM, FILL, 0-600PSI/BAR, 2.5” DIA, ¼” MNPT, SS
21	1	205949	MEMBRANE, LC LE, 4040, FILMTEC
22	1	203296	VALVE, NEEDLE, SS 316L, 3/4" FNPT

AXEON®

R2-2140 SYSTEM PART LIST

Item No.	Quantity	Part Number	Description
1	1	206420	PUMP, MULTISTAGE, 3 HP, 115-230V, 1PH, TEFC, 3SV20PA30/V09722
2	1	204914	VALVE, SOLENOID, N/C, UL, 220V, 1” FNPT, 3 METER CORD
3	1	205098	SWITCH, PRESSURE, HIGH, N/C 450PSI, ¼” MNPT, NASON
4	1	205903	VALVE, GLOBE, 316, 1" FNPT, 800LB
5	2	205113	VALVE, BALL, REDUCED PORT, ¾” FNPT, 316SS
6	1	203649	HOUSING, FILTER, BLK/BLU, 4.5”x 20”, 1” FNPT
7	1	200640	CARTRIDGE, SEDIMENT, POLYPRO, 4.5" X 20", 5 MIC
8	1	205097	SWITCH, PRESSURE, LOW, N/O 5PSI, ¼” MNPT, NASON
9	1	205589	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-18, ROPV
10	1	205593	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-46, ROPV
15	1	206350	CONTROLLER, COMPUTER, ROTROL S-150, 220V, 1PH, 12 X 10 BOX
16	1	200899	METER, FLOW, PM, 0-10 GPM, 1” MNPT x 1” MNPT
17	1	200898	METER, FLOW, PM, 0-5 GPM, 1/2" MNPT x 1/2" MNPT
18	1	200965	VALVE, CHECK, PP, 1/2" FNPT X 1/2" FNPT
19	2	205099	GAUGE, BKM, FILL, 0-100PSI/BAR, 2.5” DIA, ¼” MNPT, SS
20	2	205100	GAUGE, BKM, FILL, 0-600PSI/BAR, 2.5” DIA, ¼” MNPT, SS
21	2	205949	MEMBRANE, LC LE, 4040, FILMTEC
22	1	203296	VALVE, NEEDLE, SS 316L, 3/4" FNPT

AXEON®

R2-3140 SYSTEM PART LIST

Item No.	Quantity	Part Number	Description
1	1	206420	PUMP, MULTISTAGE, 3 HP, 115-230V, 1PH, TEFC, 3SV20PA30/V09722
2	1	204914	VALVE, SOLENOID, N/C, UL, 220V, 1” FNPT, 3 METER CORD
3	1	205098	SWITCH, PRESSURE, HIGH, N/C 450PSI, ¼” MNPT, NASON
4	1	205903	VALVE, GLOBE, 316, 1" FNPT, 800LB
5	2	205113	VALVE, BALL, REDUCED PORT, ¾” FNPT, 316SS
6	1	203649	HOUSING, FILTER, BLK/BLU, 4.5”x 20”, 1” FNPT
7	1	200640	CARTRIDGE, SEDIMENT, POLYPRO, 4.5" X 20", 5 MIC
8	1	205097	SWITCH, PRESSURE, LOW, N/O 5PSI, ¼” MNPT, NASON
9	1	205589	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-18, ROPV
10	1	205593	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-46, ROPV
11	1	205591	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-27, ROPV
15	1	206350	CONTROLLER, COMPUTER, ROTROL S-150, 220V, 1PH, 12 X 10 BOX
16	1	200899	METER, FLOW, PM, 0-10 GPM, 1” MNPT x 1” MNPT
17	1	200898	METER, FLOW, PM, 0-5 GPM, 1/2" MNPT x 1/2" MNPT
18	1	200965	VALVE, CHECK, PP, 1/2" FNPT X 1/2" FNPT
19	2	205099	GAUGE, BKM, FILL, 0-100PSI/BAR, 2.5” DIA, ¼” MNPT, SS
20	2	205100	GAUGE, BKM, FILL, 0-600PSI/BAR, 2.5” DIA, ¼” MNPT, SS
21	3	205949	MEMBRANE, LC LE, 4040, FILMTEC
22	1	203296	VALVE, NEEDLE, SS 316L, 3/4" FNPT

AXEON®

R2-4140 SYSTEM PART LIST

Item No.	Quantity	Part Number	Description
1	1	206421	PUMP, MULTISTAGE, 5HP,208-230/460V,3HP,TEFC,3SV22PB30/V10742A
2	1	204914	VALVE, SOLENOID, N/C, UL, 220V, 1” FNPT, 3 METER CORD
3	1	205098	SWITCH, PRESSURE, HIGH, N/C 450PSI, ¼” MNPT, NASON
4	1	205903	VALVE, GLOBE, 316, 1" FNPT, 800LB
5	2	205113	VALVE, BALL, REDUCED PORT, ¾” FNPT, 316SS
6	1	203649	HOUSING, FILTER, BLK/BLU, 4.5”x 20”, 1” FNPT
7	1	200640	CARTRIDGE, SEDIMENT, POLYPRO, 4.5" X 20", 5 MIC
8	1	205097	SWITCH, PRESSURE, LOW, N/O 5PSI, ¼” MNPT, NASON
9	1	205589	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-18, ROPV
10	1	205593	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-46, ROPV
11	1	205591	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-27, ROPV
12	1	205589	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-18, ROPV
15	1	203263	CONTROLLER, COMPUTER, ROTROL S-150, 220V, 3PH, 5 HP
16	1	200899	METER, FLOW, PM, 0-10 GPM, 1” MNPT x 1” MNPT
17	1	200899	METER, FLOW, PM, 0-10 GPM, 1” MNPT x 1” MNPT
18	1	200965	VALVE, CHECK, PP, 1/2" FNPT X 1/2" FNPT
19	2	205099	GAUGE, BKM, FILL, 0-100PSI/BAR, 2.5” DIA, ¼” MNPT, SS
20	2	205100	GAUGE, BKM, FILL, 0-600PSI/BAR, 2.5” DIA, ¼” MNPT, SS
21	4	205949	MEMBRANE, LC LE, 4040, FILMTEC
22	1	203296	VALVE, NEEDLE, SS 316L, 3/4" FNPT

AXEON®

R2-5140 SYSTEM PART LIST

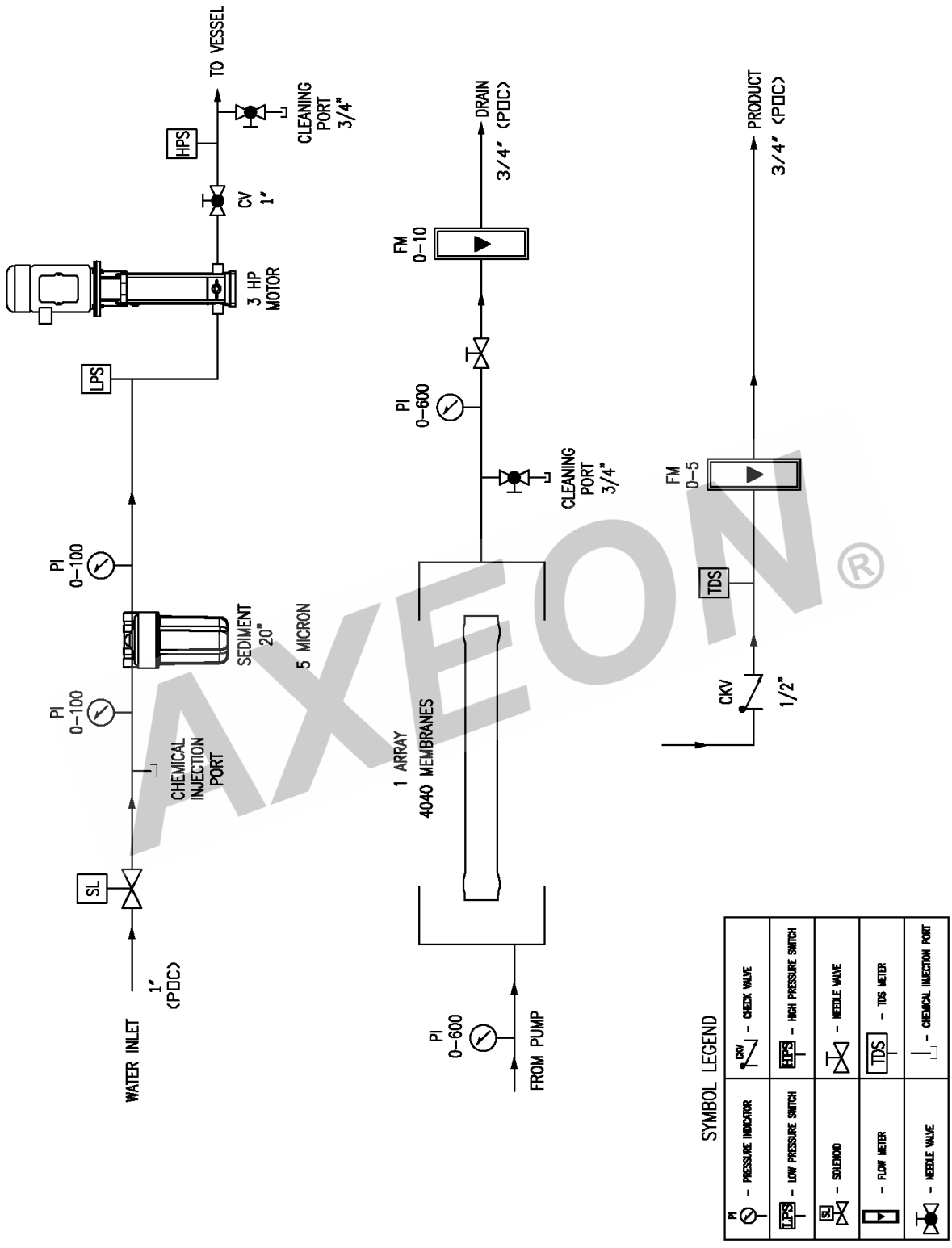
Item No.	Quantity	Part Number	Description
1	1	206421	PUMP, MULTISTAGE, 5HP,208-230/460V,3HP,TEFC,3SV22PB30/V10742A
2	1	204914	VALVE, SOLENOID, N/C, UL, 220V, 1” FNPT, 3 METER CORD
3	1	205098	SWITCH, PRESSURE, HIGH, N/C 450PSI, ¼” MNPT, NASON
4	1	205903	VALVE, GLOBE, 316, 1" FNPT, 800LB
5	2	205113	VALVE, BALL, REDUCED PORT, ¾” FNPT, 316SS
6	1	203649	HOUSING, FILTER, BLK/BLU, 4.5”x 20”, 1” FNPT
7	1	200640	CARTRIDGE, SEDIMENT, POLYPRO, 4.5" X 20", 5 MIC
8	1	205097	SWITCH, PRESSURE, LOW, N/O 5PSI, ¼” MNPT, NASON
9	1	205589	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-18, ROPV
10	1	205593	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-46, ROPV
11	1	205591	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-27, ROPV
12	1	205589	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-18, ROPV
13	1	205593	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-46, ROPV
15	1	203263	CONTROLLER, COMPUTER, ROTROL S-150, 220V, 3PH, 5 HP
16	1	200899	METER, FLOW, PM, 0-10 GPM, 1” MNPT x 1” MNPT
17	1	200899	METER, FLOW, PM, 0-10 GPM, 1” MNPT x 1” MNPT
18	1	200965	VALVE, CHECK, PP, 1/2" FNPT X 1/2" FNPT
19	2	205099	GAUGE, BKM, FILL, 0-100PSI/BAR, 2.5” DIA, ¼” MNPT, SS
20	2	205100	GAUGE, BKM, FILL, 0-600PSI/BAR, 2.5” DIA, ¼” MNPT, SS
21	5	205949	MEMBRANE, LC LE, 4040, FILMTEC
22	1	203296	VALVE, NEEDLE, SS 316L, 3/4" FNPT

AXEON®

R2-6140 SYSTEM PART LIST

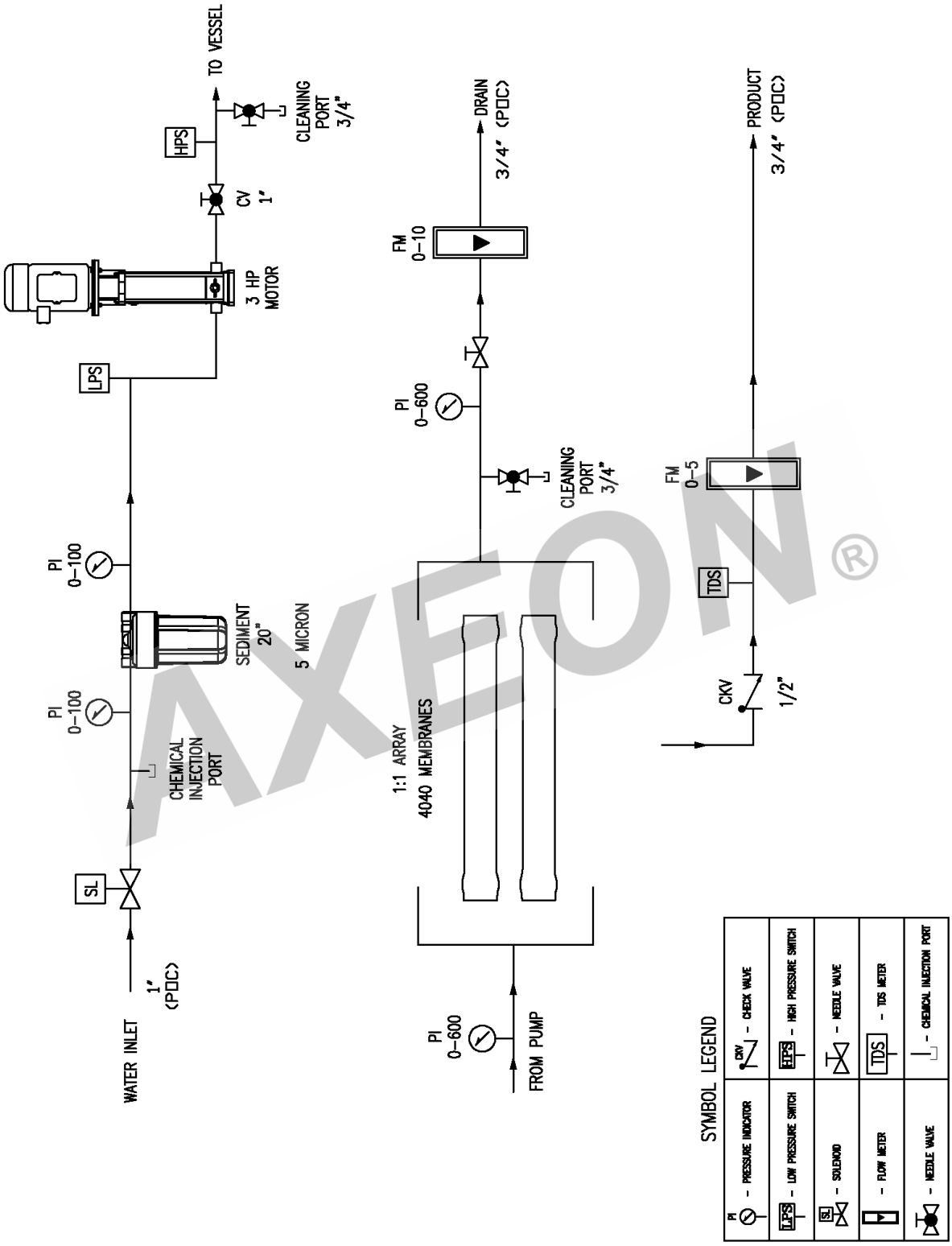
Item No.	Quantity	Part Number	Description
1	1	206422	PUMP, MULTISTAGE, 5HP,208-230/460V,3HP,TEFC,3SV26PB30/V10742A
2	1	204914	VALVE, SOLENOID, N/C, UL, 220V, 1” FNPT, 3 METER CORD
3	1	205098	SWITCH, PRESSURE, HIGH, N/C 450PSI, ¼” MNPT, NASON
4	1	205903	VALVE, GLOBE, 316, 1" FNPT, 800LB
5	2	205113	VALVE, BALL, REDUCED PORT, ¾” FNPT, 316SS
6	1	203649	HOUSING, FILTER, BLK/BLU, 4.5”x 20”, 1” FNPT
7	1	200640	CARTRIDGE, SEDIMENT, POLYPRO, 4.5" X 20", 5 MIC
8	1	205097	SWITCH, PRESSURE, LOW, N/O 5PSI, ¼” MNPT, NASON
9	1	205589	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-18, ROPV
10	1	205593	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-46, ROPV
11	1	205591	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-27, ROPV
12	1	205589	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-18, ROPV
13	1	205593	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-46, ROPV
14	1	205591	HOUSING, MEMBRANE, 450PSI, FRP, 4040, 1" VICTAULIC, P-27, ROPV
15	1	203263	CONTROLLER, COMPUTER, ROTROL S-150, 220V, 3PH, 5 HP
16	1	200899	METER, FLOW, PM, 0-10 GPM, 1” MNPT x 1” MNPT
17	1	200899	METER, FLOW, PM, 0-10 GPM, 1” MNPT x 1” MNPT
18	1	200965	VALVE, CHECK, PP, 1/2" FNPT X 1/2" FNPT
19	2	205099	GAUGE, BKM, FILL, 0-100PSI/BAR, 2.5” DIA, ¼” MNPT, SS
20	2	205100	GAUGE, BKM, FILL, 0-600PSI/BAR, 2.5” DIA, ¼” MNPT, SS
21	6	205949	MEMBRANE, LC LE, 4040, FILMTEC
22	1	203296	VALVE, NEEDLE, SS 316L, 3/4" FNPT

R2-1140 FLOW DIAGRAM



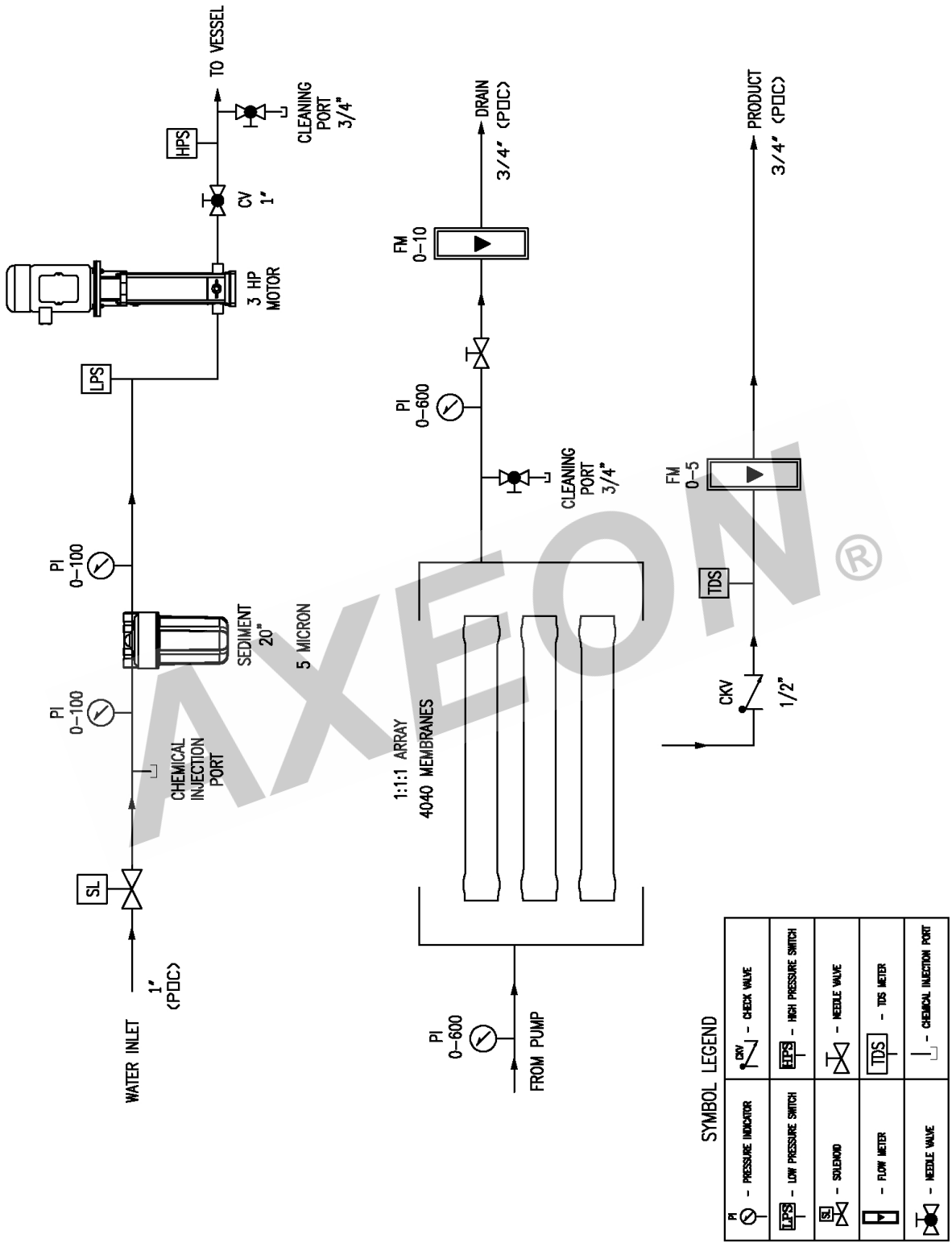
R2-2140 FLOW DIAGRAM

AXEON®



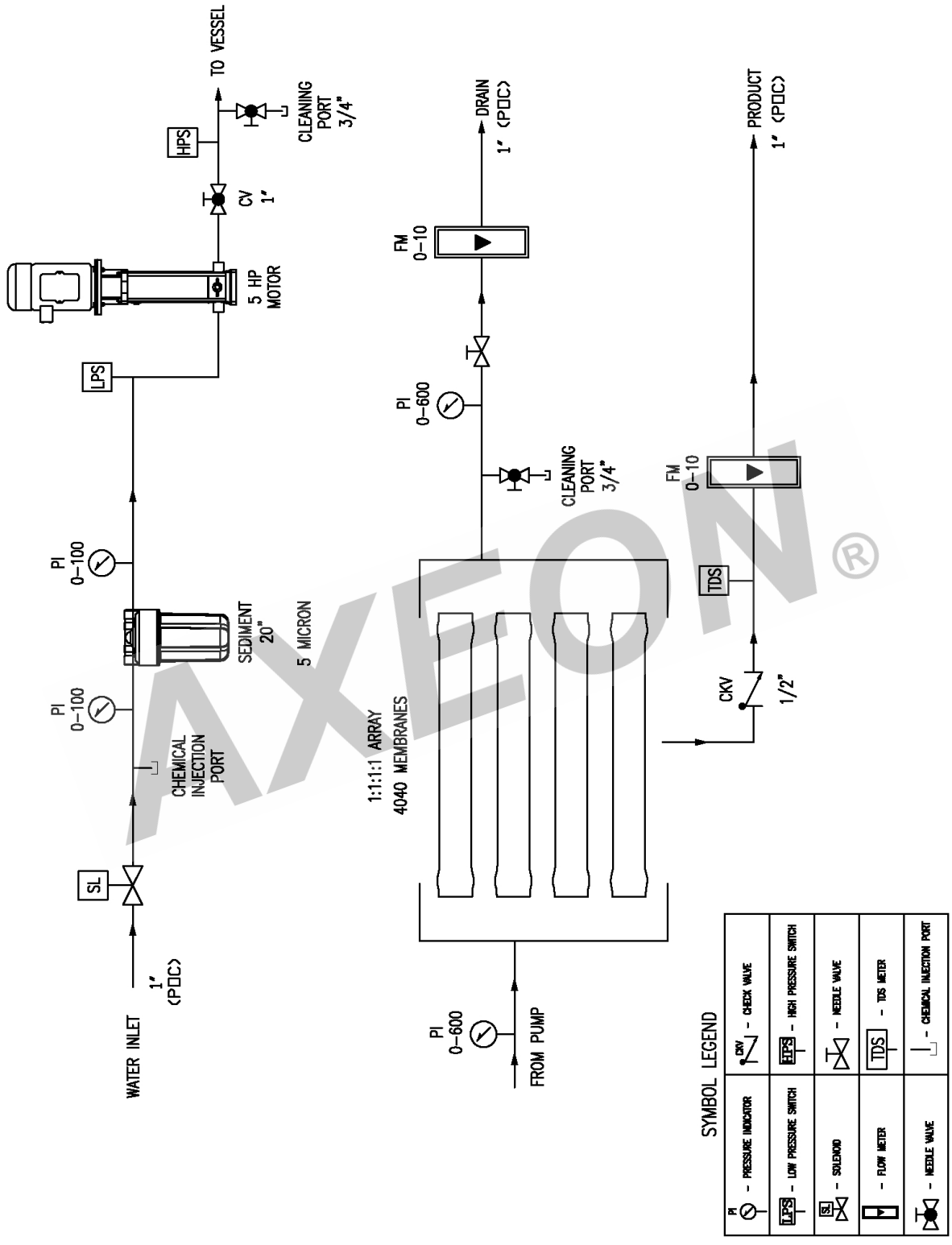
R2-3140 FLOW DIAGRAM

AXEON®



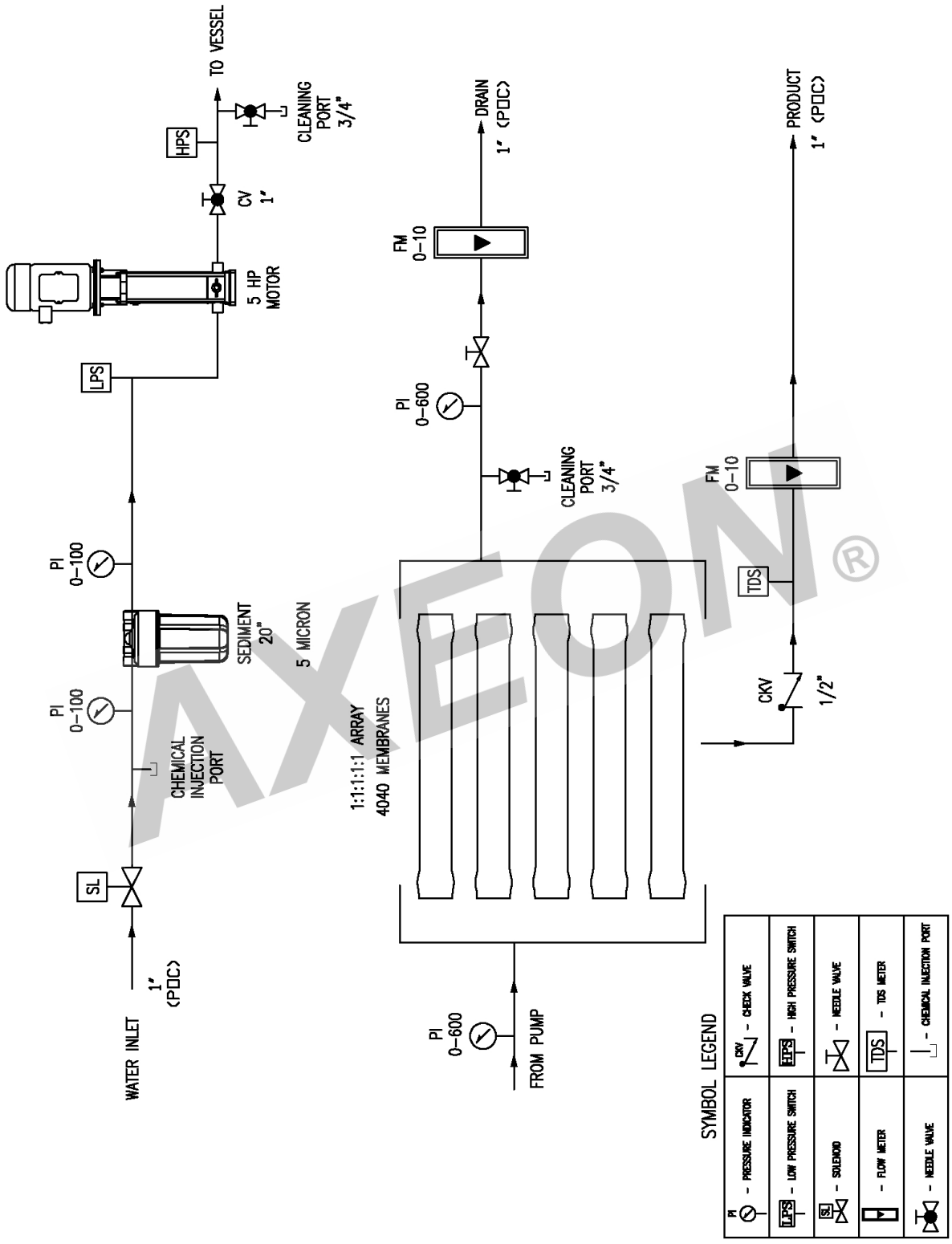
R2-4140 FLOW DIAGRAM

AXEON®



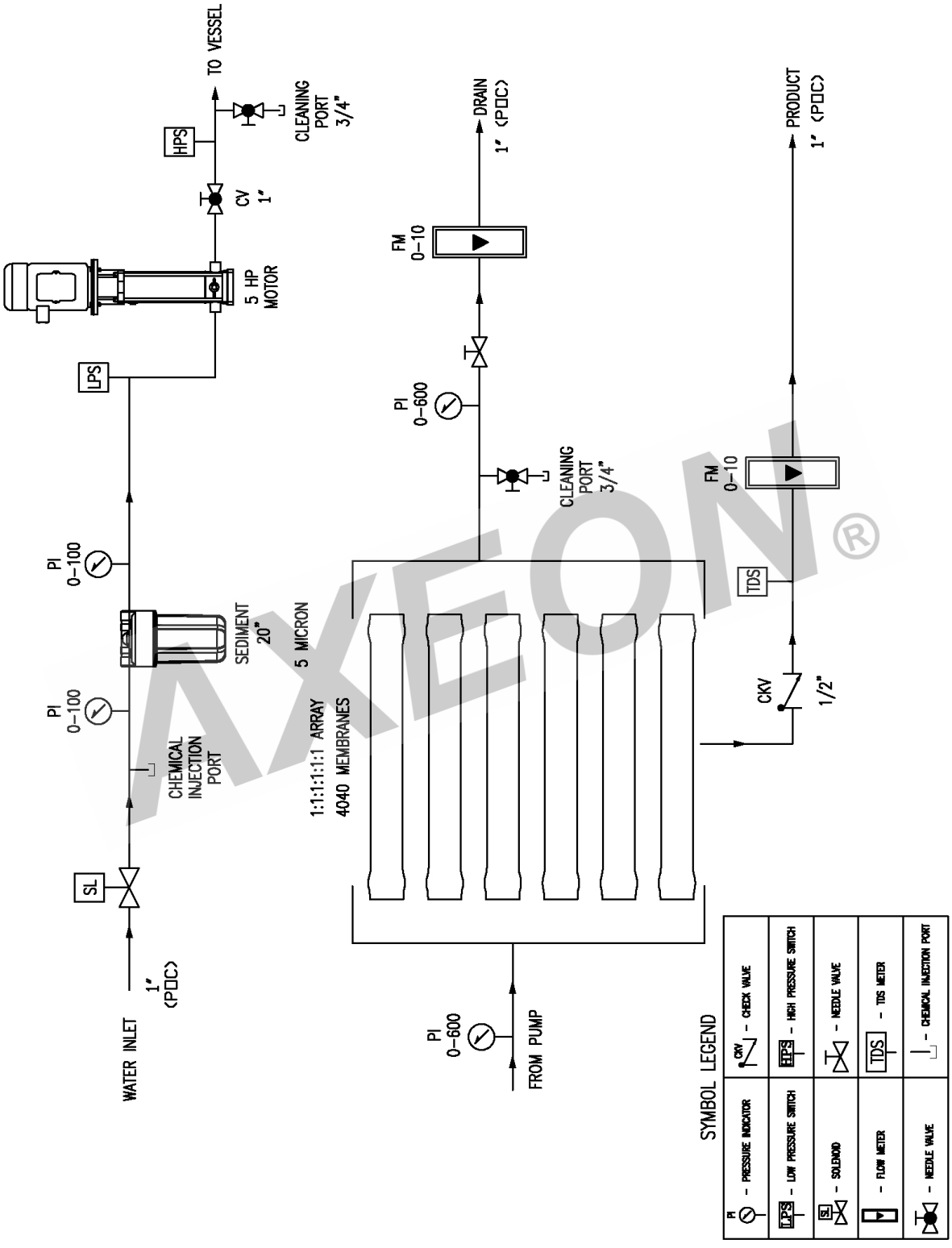
R2-5140 FLOW DIAGRAM

AXEON®

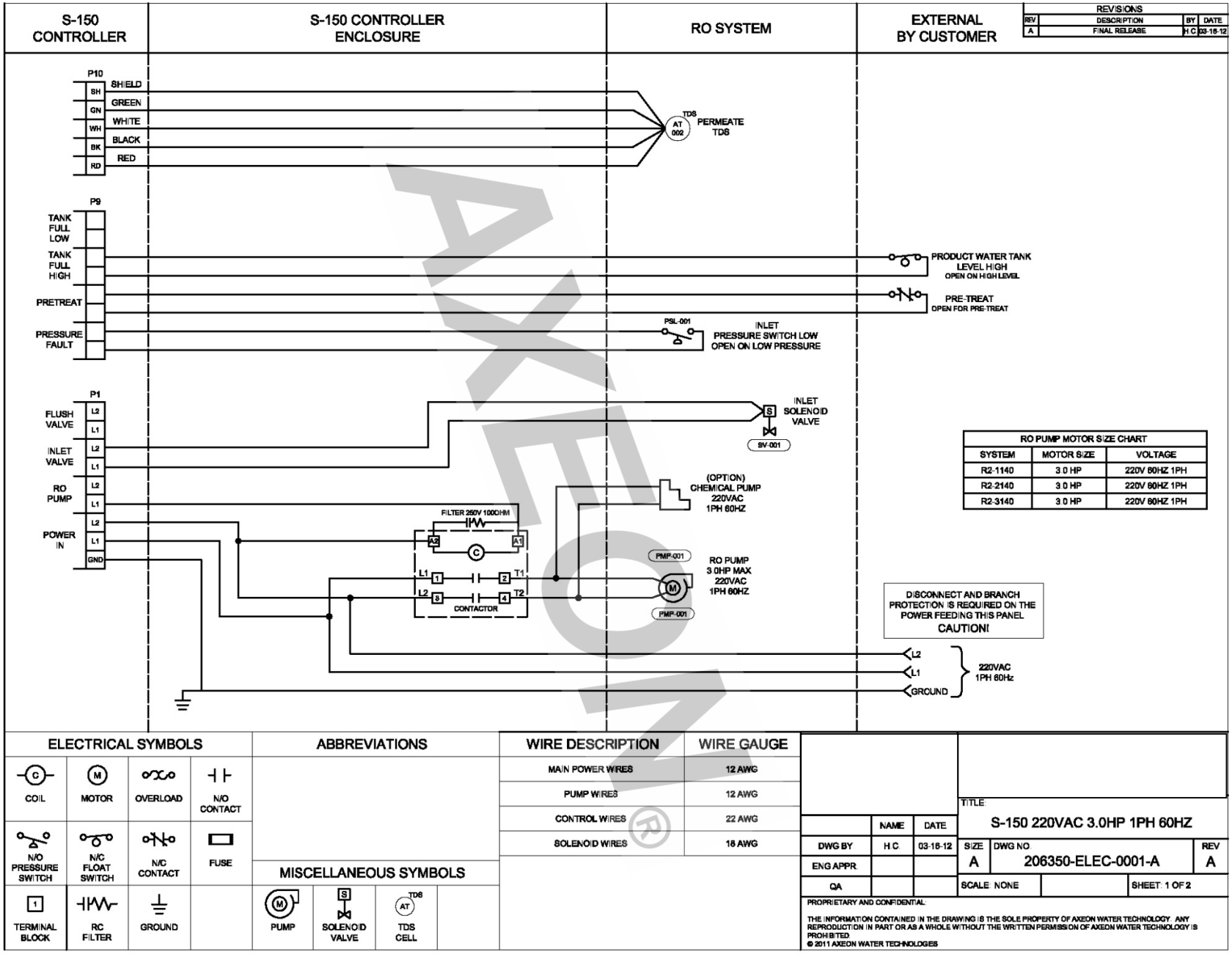


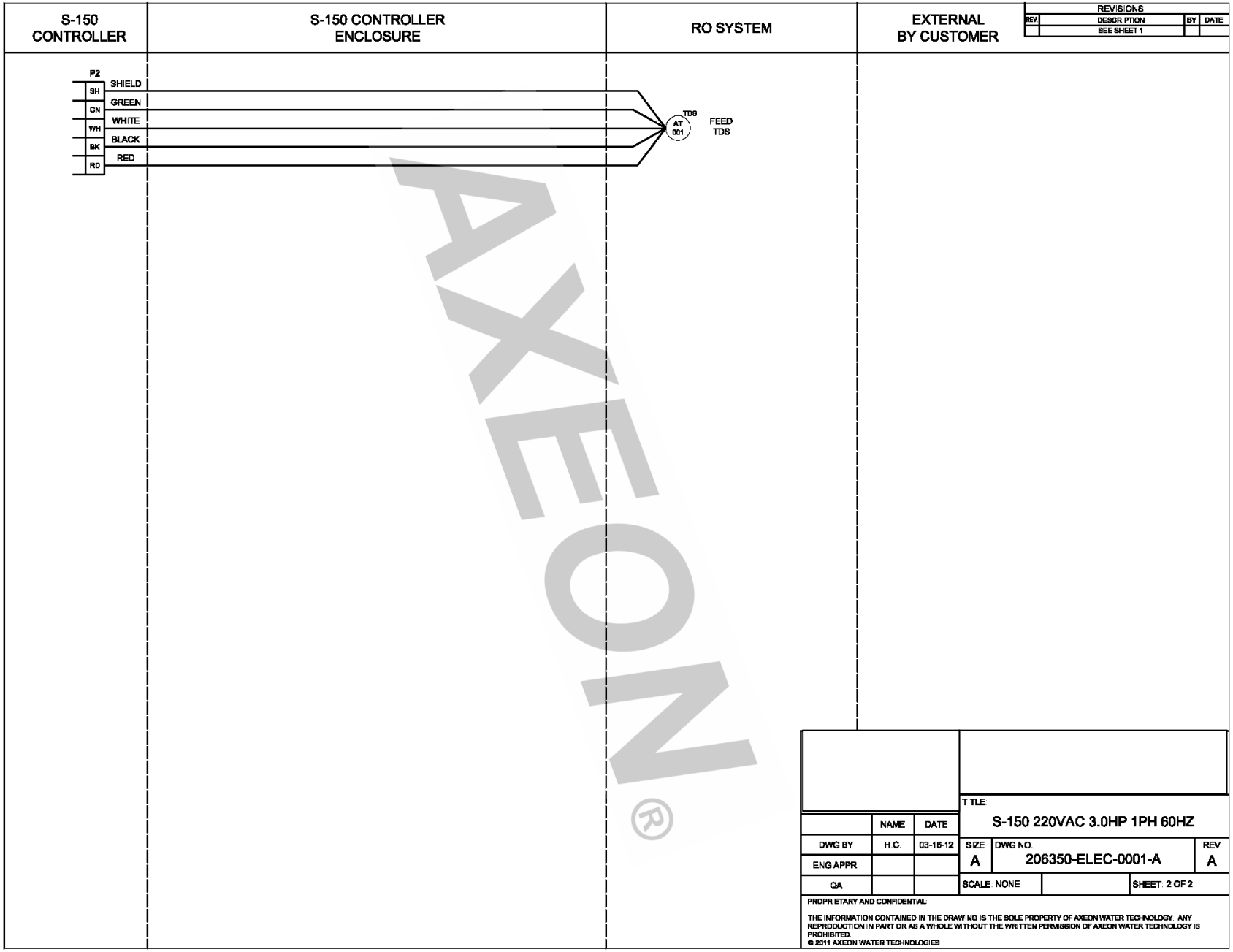
R2-6140 FLOW DIAGRAM

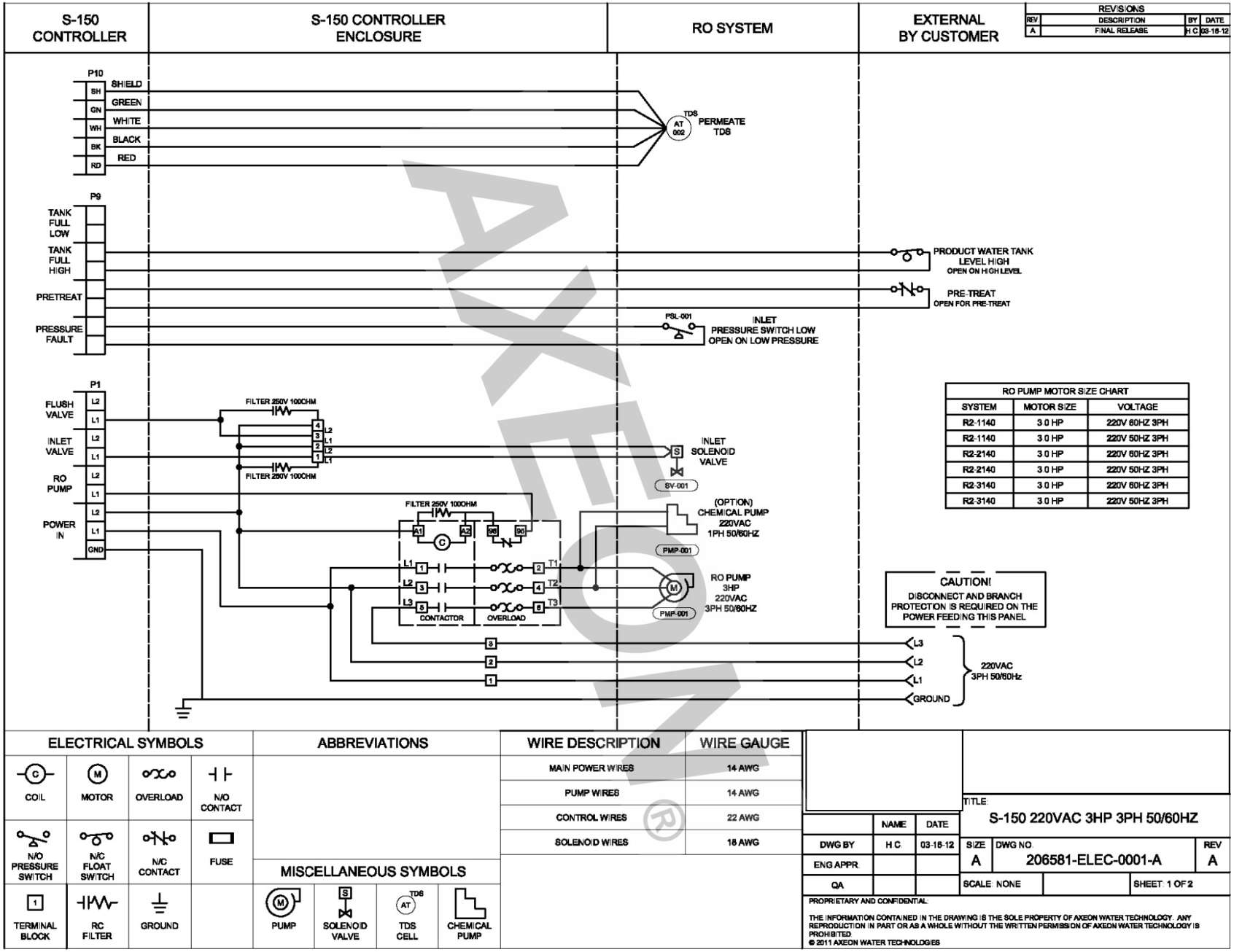
AXEON®


TO VESSEL
CLEANING PORT 3/4"
HPS
CV 1"
5 HP MOTOR
LPS
PI 0-100
PI 0-100
SEDIMENT 20"
5 MICRON
CHEMICAL INJECTION PORT
SL
1" (PDC)
WATER INLET
1:1:1:1:1:1 ARRAY
4040 MEMBRANES
DRAIN 1" (PDC)
FM 0-10
PI 0-600
CLEANING PORT 3/4"
PI 0-600
FROM PUMP
PRODUCT 1" (PDC)
FM 0-10
TDS
CKV 1/2"
SYMBOL LEGEND
PI - PRESSURE INDICATOR
LPS - LOW PRESSURE SWITCH
SL - SOLENOID
- FLOW METER
- NEEDLE VALVE
CKV - CHECK VALVE
HPS - HIGH PRESSURE SWITCH
- NEEDLE VALVE
TDS - TDS METER
- CHEMICAL INJECTION PORT

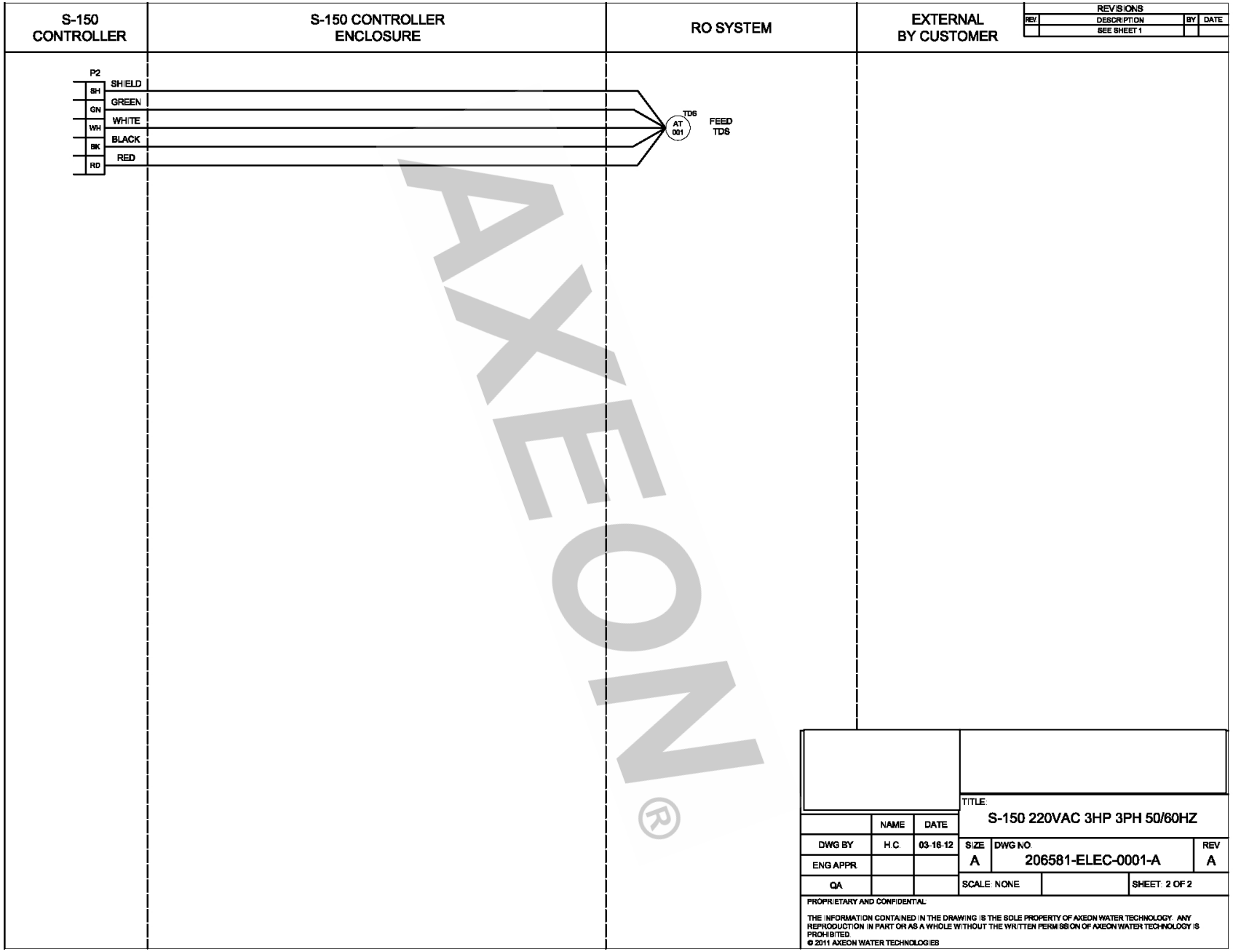
AXEON®

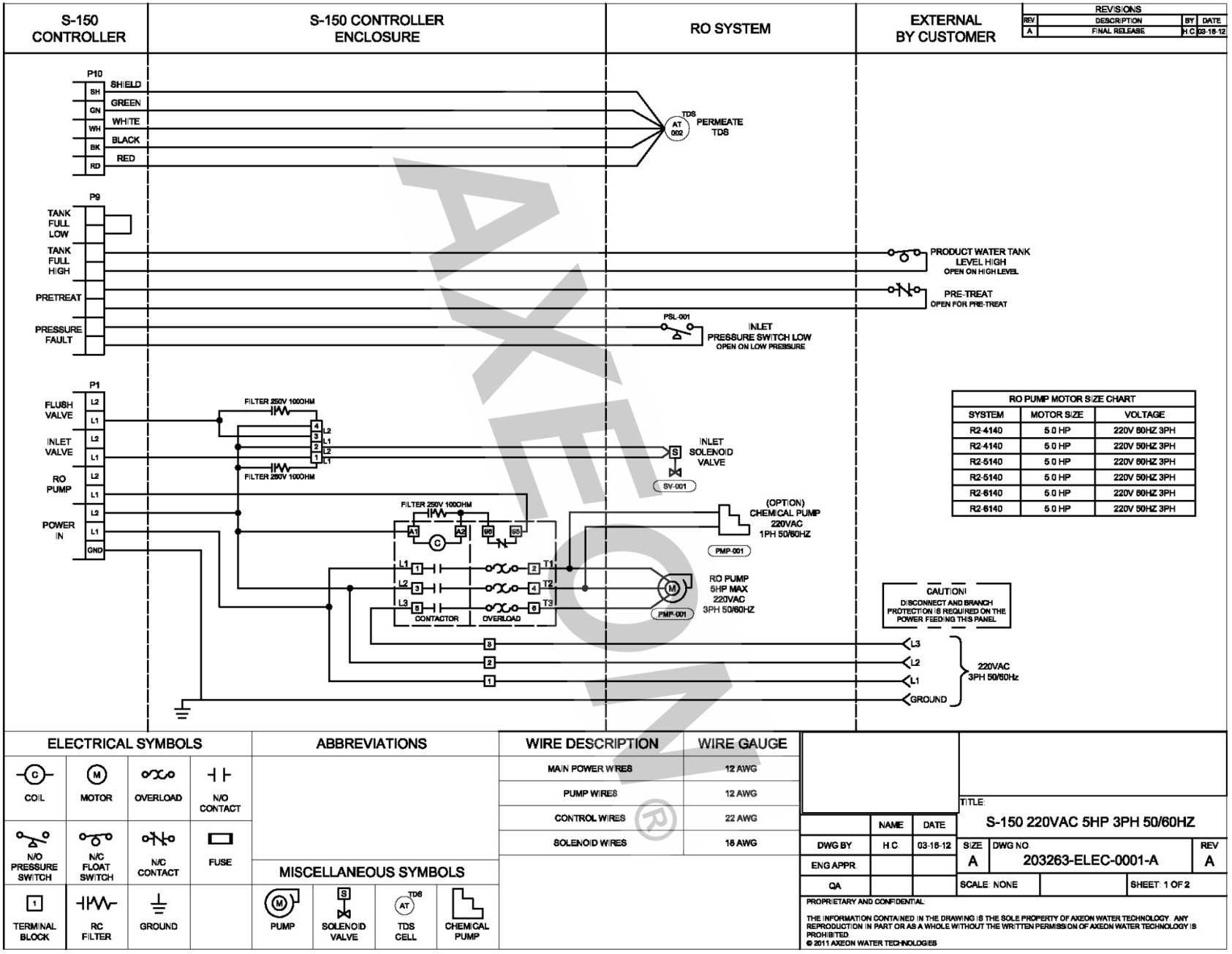

S-150 CONTROLLER
S-150 CONTROLLER ENCLOSURE
RO SYSTEM
EXTERNAL BY CUSTOMER
REVISIONS
REV | DESCRIPTION | BY | DATE
A | FINAL RELEASE | H.C | 03-16-12
P10
SH SHIELD
GN GREEN
WH WHITE
BK BLACK
RD RED
TDS AT 002 PERMEATE TDS
P9
TANK FULL LOW
TANK FULL HIGH
PRETREAT
PRESSURE FAULT
PRODUCT WATER TANK LEVEL HIGH
OPEN ON HIGH LEVEL
PRE-TREAT
OPEN FOR PRE-TREAT
PSL-001
INLET PRESSURE SWITCH LOW
OPEN ON LOW PRESSURE
P1
FLUSH VALVE
INLET VALVE
RO PUMP
POWER IN
INLET SOLENOID VALVE
SV-001
(OPTION) CHEMICAL PUMP 220VAC 1PH 60HZ
FILTER 250V 100OHM
CONTACTOR
PMP-001
RO PUMP 3.0HP MAX 220VAC 1PH 60HZ
RO PUMP MOTOR SIZE CHART
SYSTEM | MOTOR SIZE | VOLTAGE
R2-1140 | 3.0 HP | 220V 60HZ 1PH
R2-2140 | 3.0 HP | 220V 60HZ 1PH
R2-3140 | 3.0 HP | 220V 60HZ 1PH
DISCONNECT AND BRANCH PROTECTION IS REQUIRED ON THE POWER FEEDING THIS PANEL
CAUTION!
L2
L1
GROUND
220VAC 1PH 60Hz
ELECTRICAL SYMBOLS
COIL
MOTOR
OVERLOAD
N/O CONTACT
N/O PRESSURE SWITCH
N/C FLOAT SWITCH
N/C CONTACT
FUSE
TERMINAL BLOCK
RC FILTER
GROUND
ABBREVIATIONS
MISCELLANEOUS SYMBOLS
PUMP
SOLENOID VALVE
TDS CELL
WIRE DESCRIPTION | WIRE GAUGE
MAIN POWER WIRES | 12 AWG
PUMP WIRES | 12 AWG
CONTROL WIRES | 22 AWG
SOLENOID WIRES | 18 AWG
TITLE:
S-150 220VAC 3.0HP 1PH 60HZ
NAME | DATE
DWG BY | H.C | 03-16-12
ENG APPR.
QA
SIZE A | DWG NO. 206350-ELEC-0001-A | REV A
SCALE: NONE | SHEET: 1 OF 2
PROPRIETARY AND CONFIDENTIAL:
THE INFORMATION CONTAINED IN THE DRAWING IS THE SOLE PROPERTY OF AXEON WATER TECHNOLOGY. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AXEON WATER TECHNOLOGY IS PROHIBITED.
© 2011 AXEON WATER TECHNOLOGIES

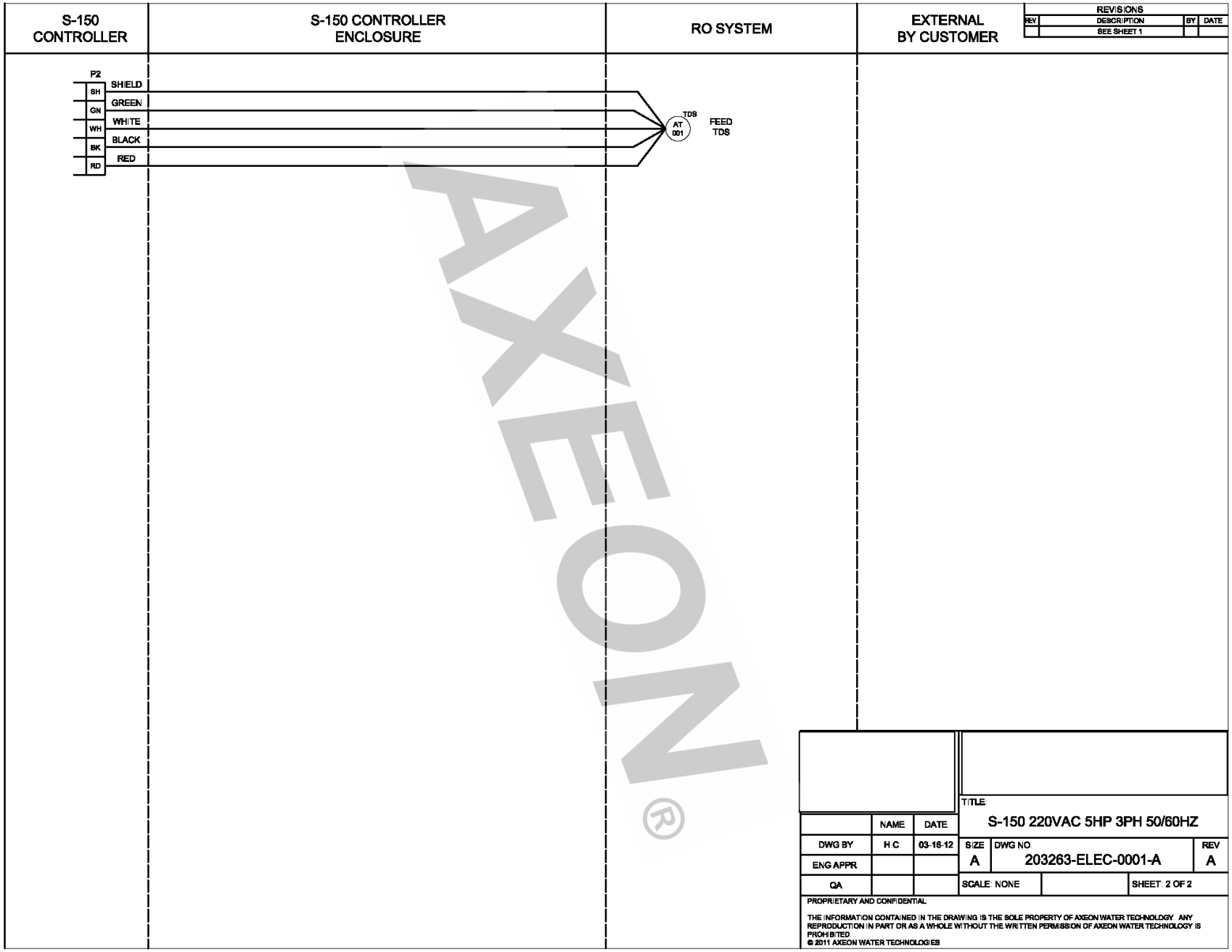

S-150 CONTROLLER
S-150 CONTROLLER ENCLOSURE
RO SYSTEM
EXTERNAL BY CUSTOMER
REVISIONS
REV
DESCRIPTION
BY
DATE
SEE SHEET 1
P2
SH
GN
WH
BK
RD
SHIELD
GREEN
WHITE
BLACK
RED
TDS
AT 001
FEED TDS
AXEON®
TITLE:
S-150 220VAC 3.0HP 1PH 60HZ
NAME
DATE
DWG BY
H C
03-16-12
ENG APPR.
QA
SIZE
A
DWG NO
206350-ELEC-0001-A
REV
A
SCALE: NONE
SHEET: 2 OF 2
PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THE DRAWING IS THE SOLE PROPERTY OF AXEON WATER TECHNOLOGY. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AXEON WATER TECHNOLOGY IS PROHIBITED.
© 2011 AXEON WATER TECHNOLOGIES

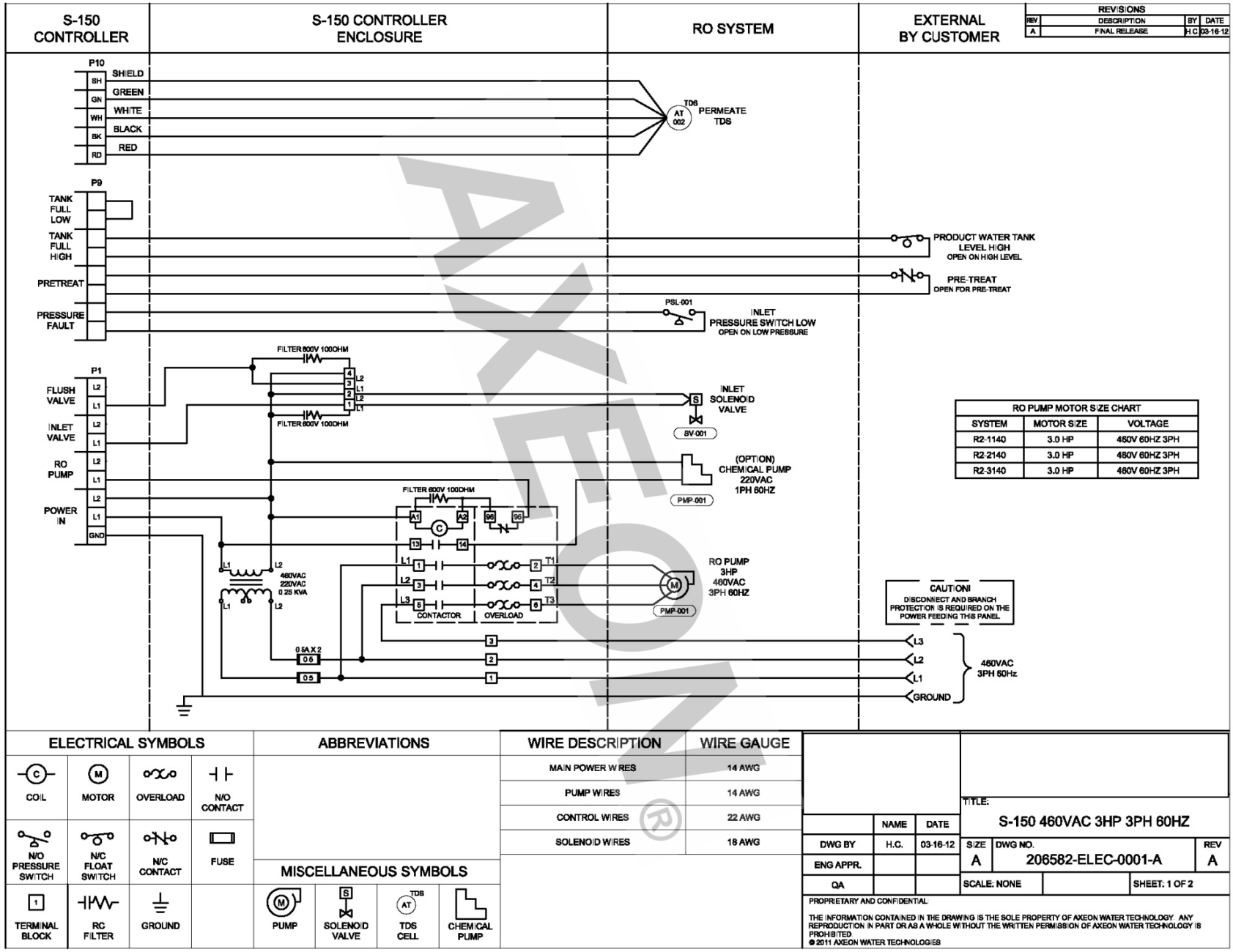

S-150 CONTROLLER
S-150 CONTROLLER ENCLOSURE
RO SYSTEM
EXTERNAL BY CUSTOMER
REVISIONS
REV | DESCRIPTION | BY | DATE
A | FINAL RELEASE | H C | 03-18-12
P10
SH SHIELD
GN GREEN
WH WHITE
BK BLACK
RD RED
TDS AT 002 PERMEATE TDS
P9
TANK FULL LOW
TANK FULL HIGH
PRETREAT
PRESSURE FAULT
PRODUCT WATER TANK LEVEL HIGH
OPEN ON HIGH LEVEL
PRE-TREAT
OPEN FOR PRE-TREAT
PSL-001
INLET PRESSURE SWITCH LOW
OPEN ON LOW PRESSURE
P1
FLUSH VALVE
INLET VALVE
RO PUMP
POWER IN
L2
L1
GND
FILTER 250V 100OHM
INLET SOLENOID VALVE
SV-001
(OPTION) CHEMICAL PUMP 220VAC 1PH 50/60HZ
PMP-001
RO PUMP 3HP 220VAC 3PH 50/60HZ
PMP-001
CONTACTOR
OVERLOAD
CAUTION!
DISCONNECT AND BRANCH PROTECTION IS REQUIRED ON THE POWER FEEDING THIS PANEL
220VAC 3PH 50/60Hz
L3
L2
L1
GROUND
RO PUMP MOTOR SIZE CHART
SYSTEM | MOTOR SIZE | VOLTAGE
R2-1140 | 3.0 HP | 220V 60HZ 3PH
R2-1140 | 3.0 HP | 220V 50HZ 3PH
R2-2140 | 3.0 HP | 220V 60HZ 3PH
R2-2140 | 3.0 HP | 220V 50HZ 3PH
R2-3140 | 3.0 HP | 220V 60HZ 3PH
R2-3140 | 3.0 HP | 220V 50HZ 3PH
ELECTRICAL SYMBOLS
COIL
MOTOR
OVERLOAD
N/O CONTACT
N/O PRESSURE SWITCH
N/C FLOAT SWITCH
N/C CONTACT
FUSE
TERMINAL BLOCK
RC FILTER
GROUND
ABBREVIATIONS
MISCELLANEOUS SYMBOLS
PUMP
SOLENOID VALVE
TDS CELL
CHEMICAL PUMP
WIRE DESCRIPTION | WIRE GAUGE
MAIN POWER WIRES | 14 AWG
PUMP WIRES | 14 AWG
CONTROL WIRES | 22 AWG
SOLENOID WIRES | 18 AWG
TITLE:
S-150 220VAC 3HP 3PH 50/60HZ
NAME | DATE
DWG BY | H C | 03-18-12
ENG APPR
QA
SIZE A | DWG NO 206581-ELEC-0001-A | REV A
SCALE: NONE | SHEET 1 OF 2
PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THE DRAWING IS THE SOLE PROPERTY OF AXEON WATER TECHNOLOGY. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AXEON WATER TECHNOLOGY IS PROHIBITED.
© 2011 AXEON WATER TECHNOLOGIES

AXEON®

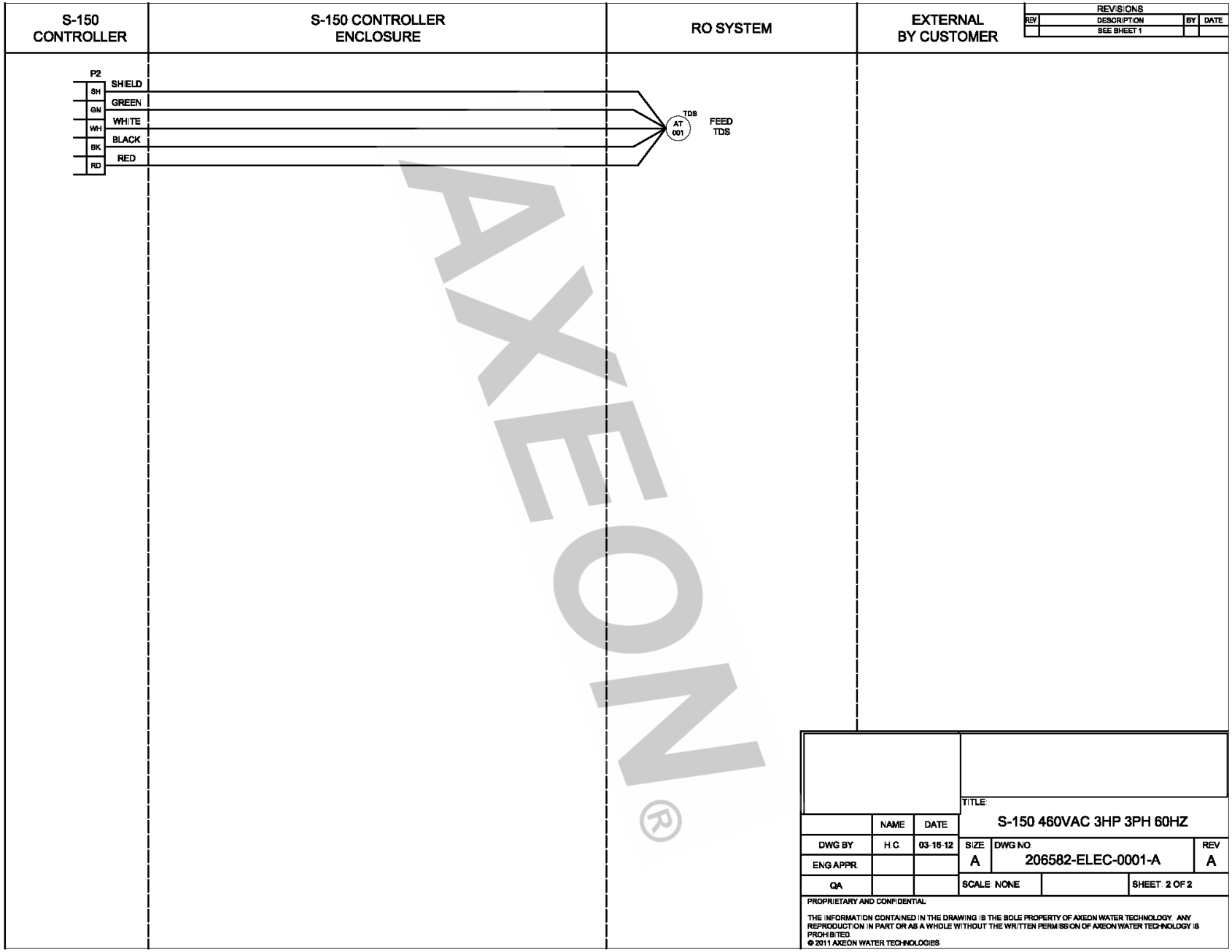

S-150 CONTROLLER
S-150 CONTROLLER ENCLOSURE
RO SYSTEM
EXTERNAL BY CUSTOMER
REVISIONS
REV
DESCRIPTION
BY
DATE
SEE SHEET 1
P2
SH
GN
WH
BK
RD
SHIELD
GREEN
WHITE
BLACK
RED
TDS
AT 001
FEED TDS
AXEON®
TITLE:
S-150 220VAC 3HP 3PH 50/60HZ
NAME
DATE
DWG BY
H.C.
03-16-12
ENG APPR
QA
SIZE
A
DWG NO
206581-ELEC-0001-A
REV
A
SCALE: NONE
SHEET 2 OF 2
PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THE DRAWING IS THE SOLE PROPERTY OF AXEON WATER TECHNOLOGY. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AXEON WATER TECHNOLOGY IS PROHIBITED.
© 2011 AXEON WATER TECHNOLOGIES

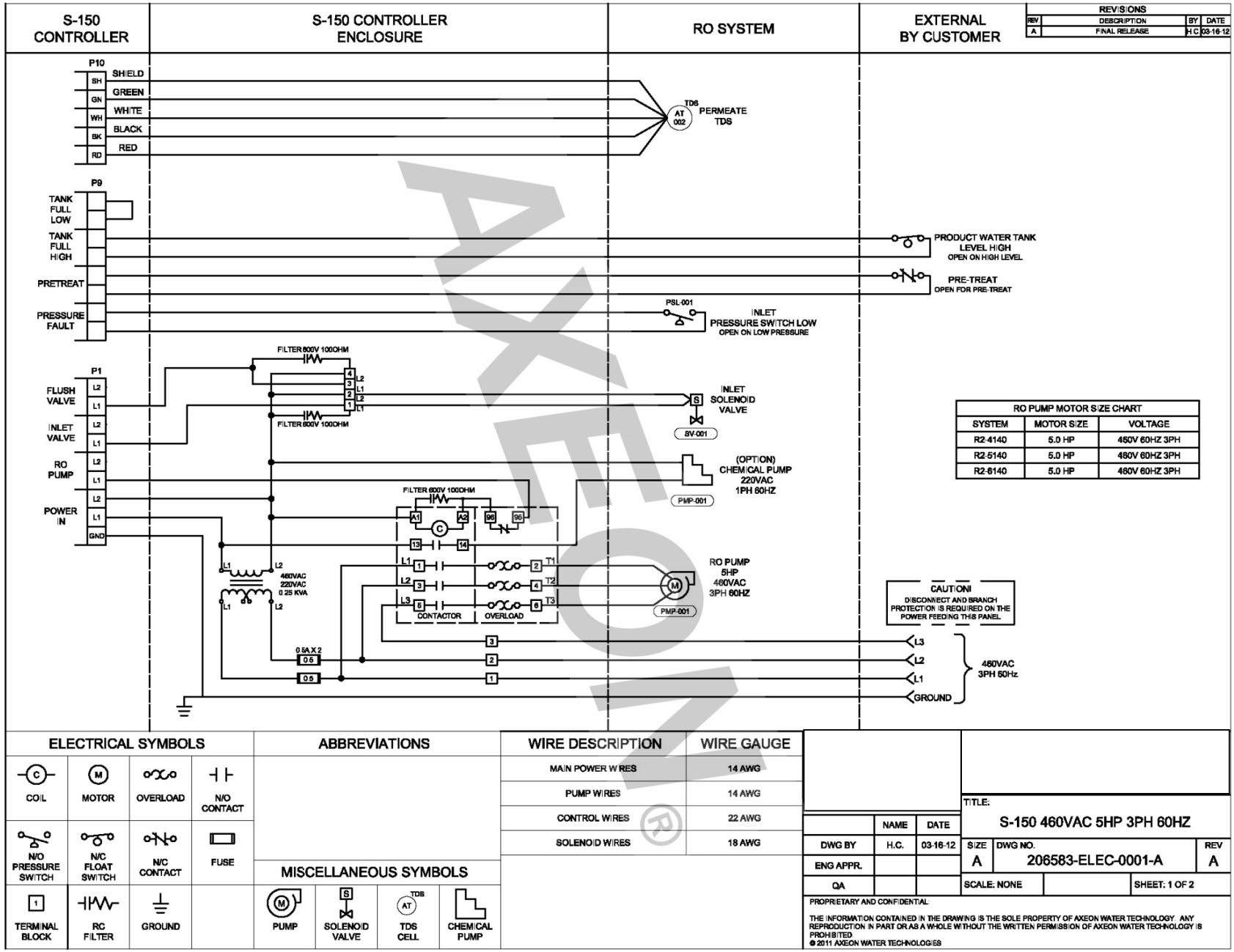

S-150 CONTROLLER
S-150 CONTROLLER ENCLOSURE
RO SYSTEM
EXTERNAL BY CUSTOMER
REVISIONS
REV | DESCRIPTION | BY | DATE
A | FINAL RELEASE | H.C | 03-16-12
P10
SH SHIELD
GN GREEN
WH WHITE
BK BLACK
RD RED
TDS AT 002 PERMEATE TDS
P9
TANK FULL LOW
TANK FULL HIGH
PRETREAT
PRESSURE FAULT
PRODUCT WATER TANK LEVEL HIGH
OPEN ON HIGH LEVEL
PRE-TREAT
OPEN FOR PRE-TREAT
PSL-001
INLET PRESSURE SWITCH LOW
OPEN ON LOW PRESSURE
P1
FLUSH VALVE
INLET VALVE
RO PUMP
POWER IN
GND
FILTER 250V 100OHM
INLET SOLENOID VALVE
SV-001
(OPTION) CHEMICAL PUMP 220VAC 1PH 50/60HZ
PMP-001
RO PUMP 5HP MAX 220VAC 3PH 50/60HZ
CONTACTOR
OVERLOAD
CAUTION!
DISCONNECT AND BRANCH PROTECTION IS REQUIRED ON THE POWER FEEDING THIS PANEL
220VAC 3PH 50/60Hz
L3
L2
L1
GROUND
RO PUMP MOTOR SIZE CHART
SYSTEM | MOTOR SIZE | VOLTAGE
R2-4140 | 5.0 HP | 220V 60HZ 3PH
R2-4140 | 5.0 HP | 220V 50HZ 3PH
R2-5140 | 5.0 HP | 220V 60HZ 3PH
R2-5140 | 5.0 HP | 220V 50HZ 3PH
R2-6140 | 5.0 HP | 220V 60HZ 3PH
R2-6140 | 5.0 HP | 220V 50HZ 3PH
ELECTRICAL SYMBOLS
COIL
MOTOR
OVERLOAD
N/O CONTACT
N/O PRESSURE SWITCH
N/C FLOAT SWITCH
N/C CONTACT
FUSE
TERMINAL BLOCK
RC FILTER
GROUND
ABBREVIATIONS
MISCELLANEOUS SYMBOLS
PUMP
SOLENOID VALVE
TDS CELL
CHEMICAL PUMP
WIRE DESCRIPTION | WIRE GAUGE
MAIN POWER WIRES | 12 AWG
PUMP WIRES | 12 AWG
CONTROL WIRES | 22 AWG
SOLENOID WIRES | 18 AWG
NAME | DATE
DWG BY | H.C | 03-16-12
ENG APPR
QA
TITLE:
S-150 220VAC 5HP 3PH 50/60HZ
SIZE A
DWG NO. 203263-ELEC-0001-A
REV A
SCALE: NONE
SHEET: 1 OF 2
PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THE DRAWING IS THE SOLE PROPERTY OF AXEON WATER TECHNOLOGY. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AXEON WATER TECHNOLOGY IS PROHIBITED.
© 2011 AXEON WATER TECHNOLOGIES


S-150 CONTROLLER
S-150 CONTROLLER ENCLOSURE
RO SYSTEM
EXTERNAL BY CUSTOMER
REVISIONS
REV
DESCRIPTION
BY
DATE
SEE SHEET 1
P2
SH
SHIELD
GN
GREEN
WH
WHITE
BK
BLACK
RD
RED
TDS
AT 001
FEED TDS
AXEON®
TITLE:
S-150 220VAC 5HP 3PH 50/60HZ
NAME
DATE
DWG BY
H.C.
03-16-12
ENG APPR.
QA
SIZE
A
DWG NO.
203263-ELEC-0001-A
REV
A
SCALE: NONE
SHEET: 2 OF 2
PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THE DRAWING IS THE SOLE PROPERTY OF AXEON WATER TECHNOLOGY. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AXEON WATER TECHNOLOGY IS PROHIBITED.
© 2011 AXEON WATER TECHNOLOGIES


S-150 CONTROLLER
S-150 CONTROLLER ENCLOSURE
RO SYSTEM
EXTERNAL BY CUSTOMER
REVISIONS
REV DESCRIPTION BY DATE
A FINAL RELEASE H.C. 03-16-12
P10
SH SHIELD
GN GREEN
WH WHITE
BK BLACK
RD RED
TDS AT 002 PERMEATE TDS
P9
TANK FULL LOW
TANK FULL HIGH
PRETREAT
PRESSURE FAULT
PRODUCT WATER TANK LEVEL HIGH
OPEN ON HIGH LEVEL
PRE-TREAT
OPEN FOR PRE-TREAT
PSL-001
INLET PRESSURE SWITCH LOW
OPEN ON LOW PRESSURE
P1
FLUSH VALVE
INLET VALVE
RO PUMP
POWER IN
FILTER 600V 100OHM
INLET SOLENOID VALVE
SV-001
(OPTION) CHEMICAL PUMP 220VAC 1PH 60HZ
PMP-001
460VAC 220VAC 0.25 KVA
RO PUMP 3HP 460VAC 3PH 60HZ
CONTACTOR
OVERLOAD
0.5A X 2
CAUTION!
DISCONNECT AND BRANCH PROTECTION IS REQUIRED ON THE POWER FEEDING THIS PANEL
460VAC 3PH 60Hz
L3
L2
L1
GROUND
RO PUMP MOTOR SIZE CHART
SYSTEM | MOTOR SIZE | VOLTAGE
R2-1140 | 3.0 HP | 460V 60HZ 3PH
R2-2140 | 3.0 HP | 460V 60HZ 3PH
R2-3140 | 3.0 HP | 460V 60HZ 3PH
ELECTRICAL SYMBOLS
COIL
MOTOR
OVERLOAD
N/O CONTACT
N/O PRESSURE SWITCH
N/C FLOAT SWITCH
N/C CONTACT
FUSE
TERMINAL BLOCK
RC FILTER
GROUND
ABBREVIATIONS
MISCELLANEOUS SYMBOLS
PUMP
SOLENOID VALVE
TDS CELL
CHEMICAL PUMP
WIRE DESCRIPTION | WIRE GAUGE
MAIN POWER WIRES | 14 AWG
PUMP WIRES | 14 AWG
CONTROL WIRES | 22 AWG
SOLENOID WIRES | 18 AWG
NAME DATE
DWG BY H.C. 03-16-12
ENG APPR.
QA
TITLE:
S-150 460VAC 3HP 3PH 60HZ
SIZE A
DWG NO. 206582-ELEC-0001-A
REV A
SCALE: NONE
SHEET: 1 OF 2
PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THE DRAWING IS THE SOLE PROPERTY OF AXEON WATER TECHNOLOGY. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AXEON WATER TECHNOLOGY IS PROHIBITED
© 2011 AXEON WATER TECHNOLOGIES

AXEON®


S-150 CONTROLLER
S-150 CONTROLLER ENCLOSURE
RO SYSTEM
EXTERNAL BY CUSTOMER
REVISIONS
REV
DESCRIPTION
BY
DATE
SEE SHEET 1
P2
SH
SHIELD
GN
GREEN
WH
WHITE
BK
BLACK
RD
RED
TDS
AT 001
FEED TDS
AXEON®
TITLE:
S-150 460VAC 3HP 3PH 60HZ
NAME
DATE
DWG BY
H.C.
03-16-12
ENG APPR
QA
SIZE
A
DWG NO
206582-ELEC-0001-A
REV
A
SCALE: NONE
SHEET: 2 OF 2
PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THE DRAWING IS THE SOLE PROPERTY OF AXEON WATER TECHNOLOGY. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AXEON WATER TECHNOLOGY IS PROHIBITED.
© 2011 AXEON WATER TECHNOLOGIES



RO PUMP MOTOR SIZE CHART		
SYSTEM	MOTOR SIZE	VOLTAGE
R2-4140	5.0 HP	460V 60HZ 3PH
R2-5140	5.0 HP	460V 60HZ 3PH
R2-6140	5.0 HP	460V 60HZ 3PH

ELECTRICAL SYMBOLS

COIL	MOTOR	OVERLOAD	N/O CONTACT
N/O PRESSURE SWITCH	N/C FLOAT SWITCH	N/C CONTACT	FUSE
TERMINAL BLOCK	RC FILTER	GROUND	

ABBREVIATIONS

MISCELLANEOUS SYMBOLS

PUMP	SOLENOID VALVE	TDS CELL	CHEMICAL PUMP

WIRE DESCRIPTION	WIRE GAUGE
MAIN POWER WIRES	14 AWG
PUMP WIRES	14 AWG
CONTROL WIRES	22 AWG
SOLENOID WIRES	18 AWG

	NAME	DATE
DWG BY	H.C.	03-16-12
ENG APPR.		
QA		

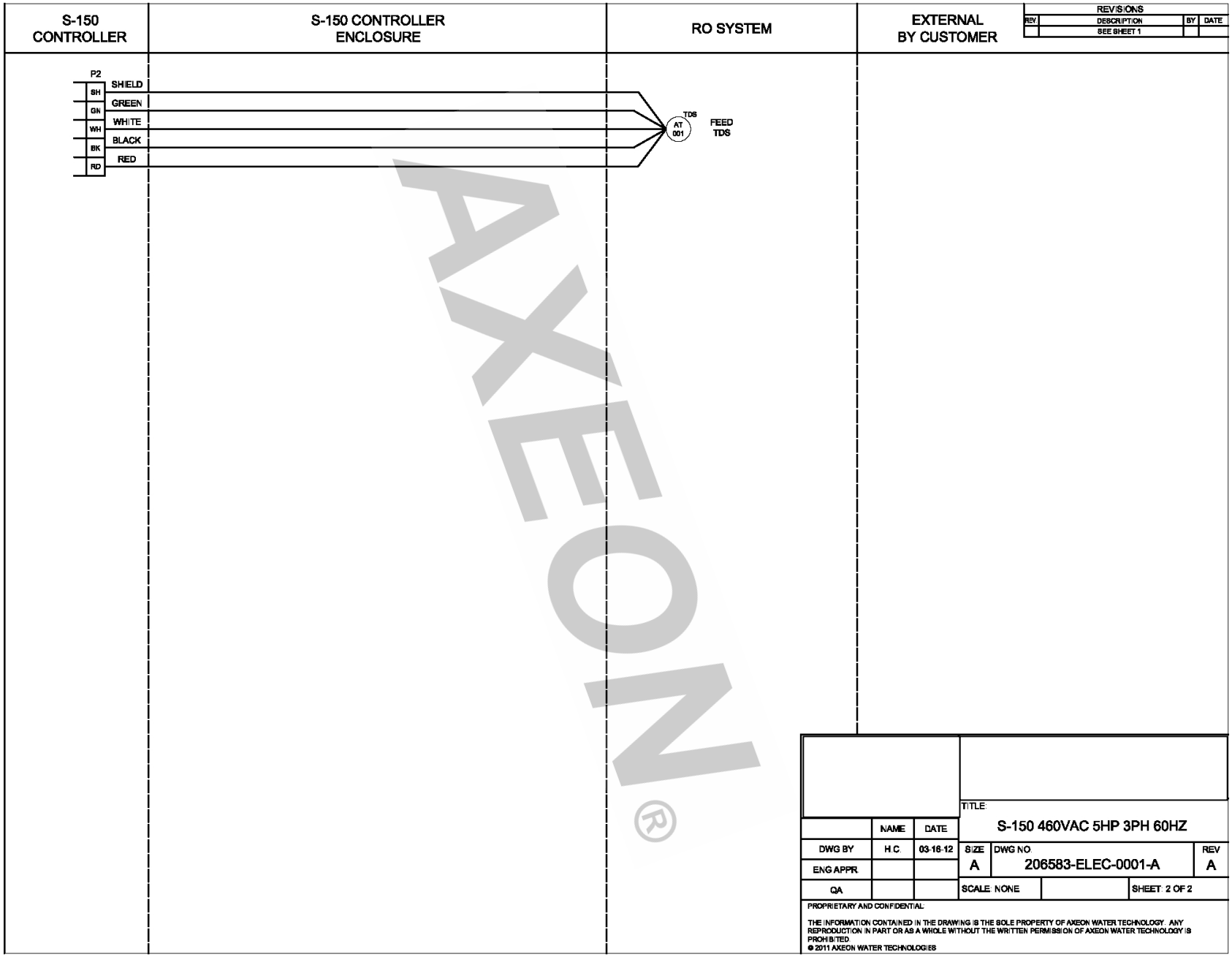
TITLE: S-150 460VAC 5HP 3PH 60HZ

SIZE: A | DWG NO.: 206583-ELEC-0001-A | REV: A

SCALE: NONE | SHEET: 1 OF 2

PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THE DRAWING IS THE SOLE PROPERTY OF AXEON WATER TECHNOLOGY. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AXEON WATER TECHNOLOGY IS PROHIBITED
© 2011 AXEON WATER TECHNOLOGIES


S-150 CONTROLLER
S-150 CONTROLLER ENCLOSURE
RO SYSTEM
EXTERNAL BY CUSTOMER
REVISIONS
REV
DESCRIPTION
BY
DATE
SEE SHEET 1
P2
SH
SHIELD
GN
GREEN
WH
WHITE
BK
BLACK
RD
RED
TDS
AT 001
FEED TDS
AXEON®
TITLE:
S-150 460VAC 5HP 3PH 60HZ
NAME
DATE
DWG BY
H.C.
03-16-12
ENG APPR.
QA
SIZE
A
DWG NO.
206583-ELEC-0001-A
REV
A
SCALE: NONE
SHEET: 2 OF 2
PROPRIETARY AND CONFIDENTIAL:
THE INFORMATION CONTAINED IN THE DRAWING IS THE SOLE PROPERTY OF AXEON WATER TECHNOLOGY. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF AXEON WATER TECHNOLOGY IS PROHIBITED.
© 2011 AXEON WATER TECHNOLOGIES

This Page Intentionally Left Blank

AXEON®